

# APML HANDBOOK



***21 JANUARY 2003***

***ALL COMMENTS SHOULD BE PROVIDED TO  
NAVAIR 3.1E***

## PREFACE

APMLs and Logistics Team Members,

I am pleased to present to you the inaugural version of your APML Handbook. This tool is the product of thousands of hours of dedicated work. I am extremely proud of and grateful to each participant who dedicated time and effort to accomplishing this incredible task.

This tool, in concert with your training in Product Support Fundamentals, will serve as the foundation of your Logistics knowledge. We have focused the Handbook on the logistics processes, specific logistics information, guidelines and ready references necessary to work within the acquisition cycle. It is intended to help answer the *hard questions* and provide you the opportunity for continued success during your assignment.

As the Logistics Leaders and Experts within the NAVAIR team, I encourage you to become familiar with and to regularly use this tool. This reference is not a replacement for your hands-on experience but serves as a repository for the knowledge, experience and expertise of those who are now or have been shouldered with the great responsibility of leading a logistics team. Please use this valuable knowledge as your compass for navigating the Acquisition Life Cycle as it pertains to Logistics. This tool is an *enabler* and will assist you in your every day quest to provide available, reliable and maintainable systems, equipment and products to the War Fighter.

With deepest respect,

Captain D. K. Christensen  
Logistics Integration Management

AIR 3.1

## Acknowledgements

To the Members of the Expert Integration Team, AIR-3.1E including, Mr. Paul Kovalsky, Mr. Jim Hall and Ms Jennifer Altomare and the many subject matter experts throughout the 3.0 competency.

To National Technologies Associates, Inc (NTA) of Lexington Park, Md. Mr. John Kaufmann CEO, Mr. John Grove, Division Director Systems Acquisition and Support Services (SASS) and SASS team members, Bill Jones, Ken Gray, Dave Kennedy.

To CTEK Global Services, Arlington, VA, Mr. Niles Crouch

## References

The information presented in the APML HandBook is a compilation of acquisition and logistics information and processes from existing government sources including various instructions, guidebooks, guidelines, subject matter presentations, with references and links identified in each of the subject matter TABS.

## **HANDBOOK ABCs**

*This Handbook is organized as follows:*

### **Preface**

### **Table of Contents**

- List of Appendices
  - Appendix A, Acronyms
  - Appendices B-Q, General acquisition and logistics requirement discussion areas
- List of Tabs
  - B-1 through Q-1, acquisition and logistics subject matter items in alphabetical sequence

### **Foreword:**

- Provides the Purpose
- Summarizes APML product support responsibility for tasks, products and actions to;
  - Cause product support considerations to influence requirements and design.
  - Define product support requirements that are optimally related to design and each other.
  - Acquire the required product support
  - Provide the required product support during the operational phase at the minimum cost.

### **Introduction:**

- Product support discussion
- Logistic Element definitions
- Defense Acquisition Management Framework chart, and related information



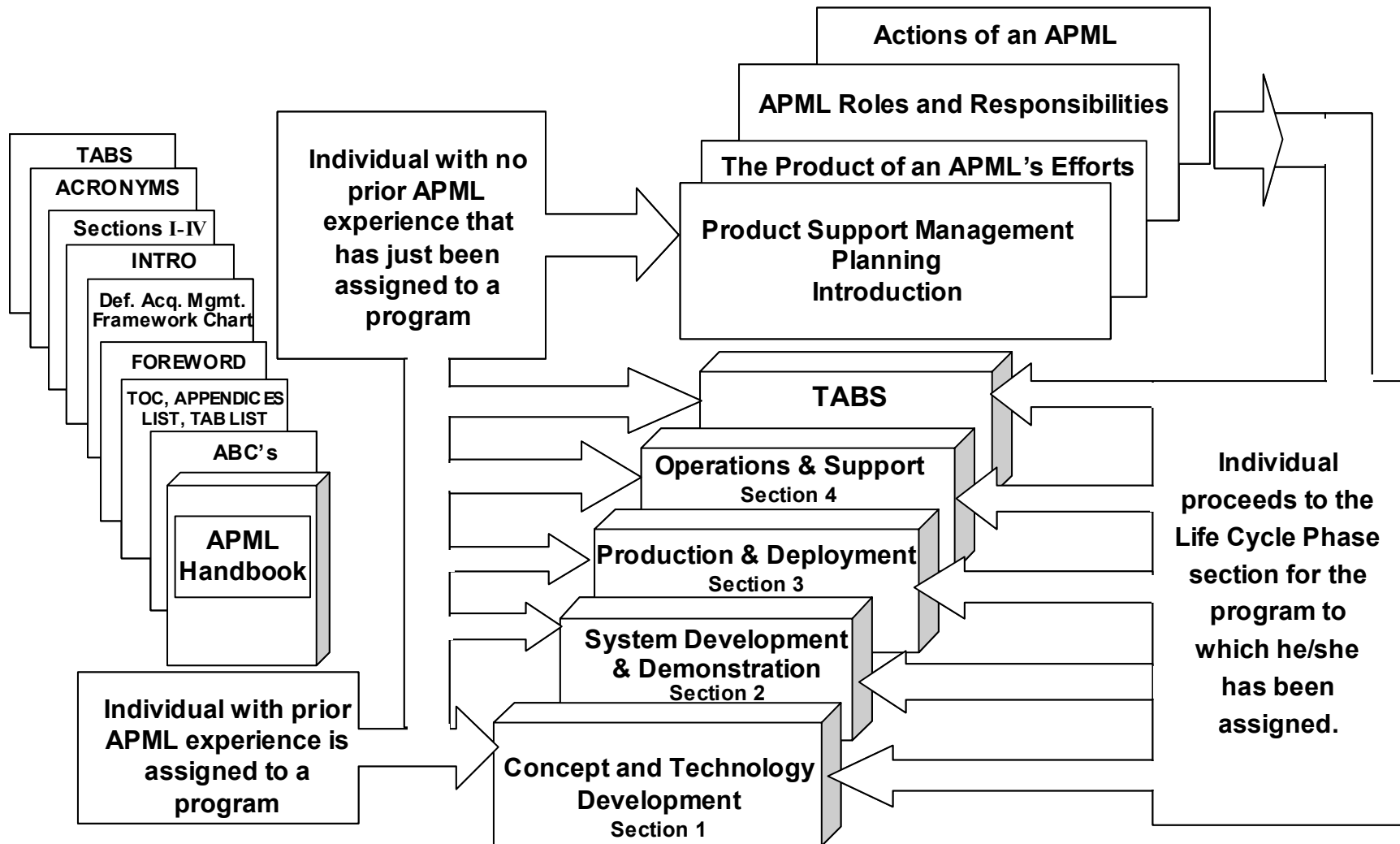
**Sections I-IV:**

- are based on the four DOD 5000 Acquisition Model Life Cycle Phases and contain ;
- Introductions, Status of activities, Entrance/ Exit Criteria and APML Considerations focused on product support during that phase
- APML Roles and Responsibilities related to the logistics support requirements for that Acquisition Phase
- Sub-sections; Acquisition program activity discussion formatted by;
  - **WHO** - Activity, Organization Action/Coordinating action activity
  - **WHAT** - Requirement definition
  - **WHY** - Reason for the item
  - **WHEN** - Timeframe required
  - **WHERE** - Location required action takes place
  - **APML ROLE** - Responsibility, coordination and or awareness
  - **HOW** - Guidance, Policy, Procedure, Process and where to find it, specifically in the Tabs contained in appendices B-Q.

**TABS:**

**B-1 through Q-1** contain related acquisition logistics information formatted by;

- **WHO** -
- **WHAT** -
- **WHY** -
- **WHEN** -
- **WHERE** -
- **HOW** -
- **APML ROLE** -
- **POC** - Subject Matter Expert (SME) or responsibility
- **REF** - Policy, guidance, procedure, relative information
- **LINKS** - Related web site info (access can be obtained by typing in the URL direct (ex. [www.nalda.navy.mil](http://www.nalda.navy.mil)) if you have any problems.)

**APML Handbook Illustration**

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## **FOREWORD**

Product Support is a multi-functional, technical management discipline associated with the design, development, test, production, fielding, sustainment, improvement and modification of cost-effective systems that achieve the user's peacetime and wartime readiness requirements. The principal objectives of Product Support are to ensure that support considerations are an integral part of the system's design requirements; that the system can be cost-effectively supported throughout its life-cycle; and that the infrastructure functions necessary for the initial fielding and operational support of the system are identified, develop, and acquired. The majority of a system's life-cycle costs can be attributed directly to operations and support costs. Because these costs are largely determined early in system development, it is important that system developers evaluate potential operational and support costs of alternative designs and factor these into early design decisions.

***This handbook has been prepared to assist all APMLs. It is not intended to be the whole or complete answer to any question or situation that may arise. It is intended to get the user headed in the direction he or she needs to follow to achieve the answer.***

The Legacy ***Defense Acquisition Deskbook (DAD)***, currently in transition to the Acquisition Knowledge Sharing System (AKSS), and under the Defense Acquisition University (DAM) management, defines the four phases of acquisition and the overarching support development tasks. The APML Handbook provides the roles & responsibilities for each acquisition phase summarizing tasks, products and actions to:

### **SECTION I – CONCEPT & TECHNOLOGY DEVELOPMENT PHASE**

Cause Product Support considerations to influence requirements and design.

### **SECTION II – SYSTEM DEVELOPMENT & DEMONSTRATION PHASE**

Define Product Support requirements that are optimally related to design and each other.

### **SECTION III – PRODUCTION & DEPLOYMENT PHASE**

Acquire the required Product Support.

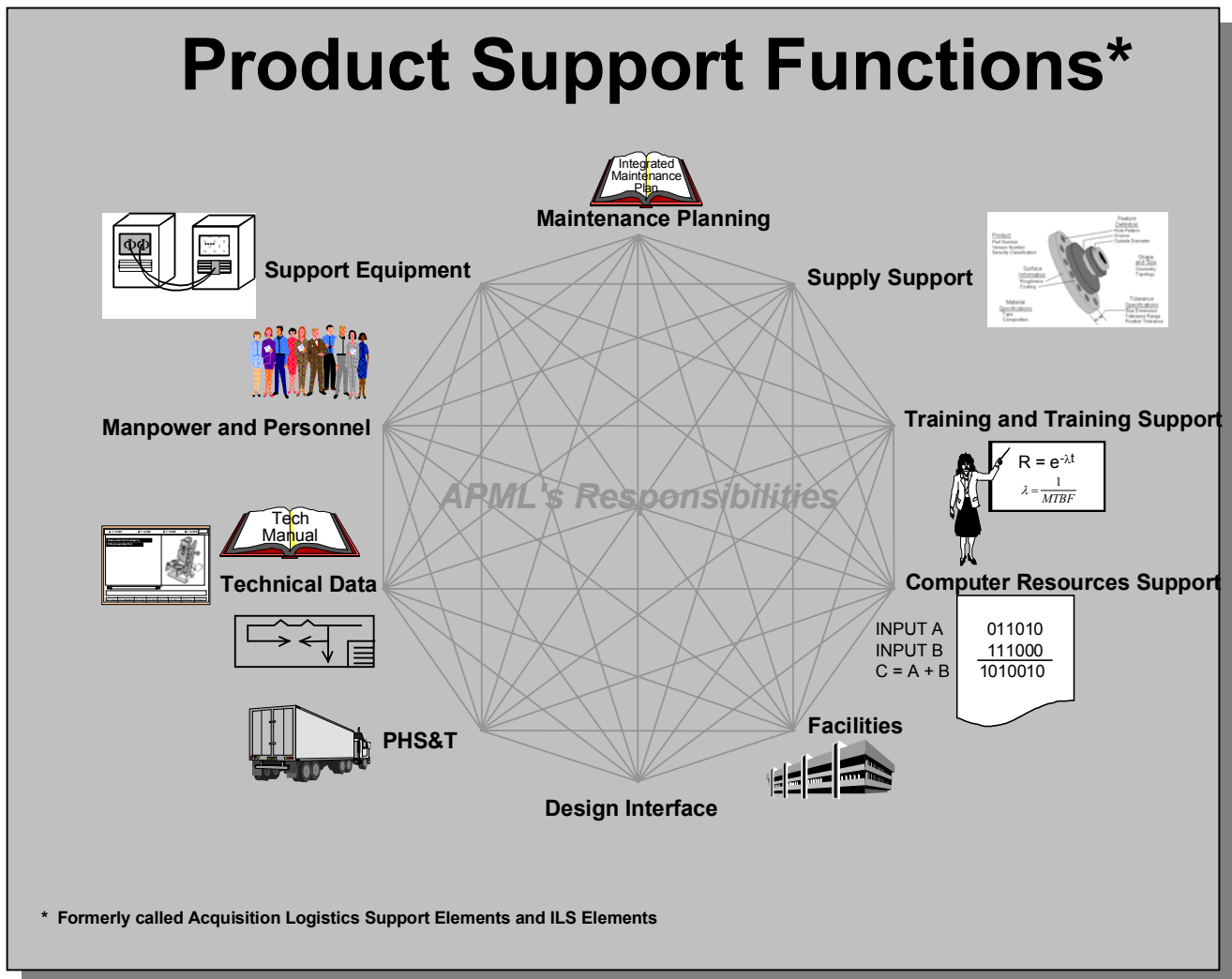
### **SECTION IV – OPERATIONS & SUPPORT PHASE**

Provide the required Product Support during the operational phase at the minimum cost.

Further support is provided in Appendices B-Q, which are technical summaries providing roadmaps to solutions, or the experts in each discipline.

## INTRODUCTION

# Product Support Functions\*



**Product support** is a package of logistics support functions necessary to maintain the readiness and operational capability of a system. Supportability factors are integral elements of program performance specifications. However, Product Support requirements are not to be stated as distinct logistics elements, but instead as performance requirements that relate to a system's operational effectiveness, operational suitability, and life-cycle cost reduction. Product Support acquisition activities normally encompass the functions identified below. Each function should be addressed for both hardware and software in both peacetime and wartime conditions. Product Support functions for systems are shown in the figure above. These Product Support functions are also called Logistics Elements, ILS Elements, Acquisition Logistics Support Elements, ALS Elements, and Support Performance Requirements.

1. **Maintenance Planning (MP).** Planning required to evolve and establish maintenance concepts and requirements for the lifetime of the system. Because of the impacts on systems design and the long term operations and support cost implications, a cost effective support concept needs to be established early in the program after careful consideration of all viable alternatives and refined concurrently with the design effort into detailed Maintenance Plans.
2. **Manpower and Personnel (M&P).** Military and civilian personnel with the skills and grades required to operate and maintain the system over its lifetime at peacetime and wartime rates. Program managers should strive to minimize the quantity of personnel and the skill levels required to operate and maintain systems.
3. **Supply Support (SS).** Secondary items necessary to field and maintain the system including consumables, repair parts, and spares.
4. **Support Equipment (SE).** All equipment required for the operation and maintenance of the system. This includes associated multi-use end items, ground handling and maintenance equipment, tools, metrology and calibration equipment, test equipment, and ATS, which includes automatic test equipment hardware and operating system software, test program sets that include the interface test adapter hardware and software programs to test individual weapon electronic items, and the associated software development environments and interfaces. It also includes the acquisition of Product Support for the SE.
5. **Technical Manuals and Technical Data (TD).** Scientific or technical information recorded in any form or medium (such as manuals and drawings). Computer programs and related software are not technical data, whereas the documentation of computer programs and related software are technical data. Also excluded are financial data or other information related to contract administration.
6. **Training and Training Devices.** Processes, procedures, techniques, training devices, and equipment used to train civilian and active duty and reserve military personnel to operate and maintain the system. This includes, individual and crew training (both initial and continuation), new equipment training; initial, formal, and on-the-job training.
7. **Computer Resources Support (CRS).** Facilities, hardware, system software, software development and support tools, documentation, ATS, and people needed to operate and maintain embedded computer systems.
8. **Facilities (FAC).** Permanent, semi-permanent, or temporary real property assets required for the system, including conducting studies to define facilities or facility improvements, locations, space needs, utilities, environmental requirements, real estate requirements, and equipment.

9. **Packaging, Handling, Storage, and Transportation (PHS&T).** Resources, processes, procedures, design considerations, and methods to ensure that all system, equipment, and support items are preserved, packaged, handled, and transported properly, including environmental considerations, equipment preservation requirements for short and long term storage, and transportability.
10. **Design Interface (DI).** Product Support interfaces with the design through Systems Engineering. Supportability is required as part of the requirements generation and analysis activities and continues through design, test and evaluation, production, and fielding. The early focus should result in the establishment of support related design parameters. These parameters should be expressed both quantitatively and qualitatively in operational terms and specifically relate to systems readiness objectives and the Product Support costs of the system. Design Interface defines and specifies measurable support performance requirements as Product Support required by analytically developed Maintenance Plans. This Product Support (people, parts, pubs, tools, and test equipment) results from performing Supportability (S) Analysis.

**Supportability (S) Analysis** is the Systems Engineering application of Product Support. S Analysis comprises logical, analytical, repeatable, auditable, step-by-step functions whose performance results in Product Support required to prevent or correct functional failures of the hardware system. Design Interface provides Supportability (S) Analysis results in the analytically developed Maintenance Plan constraining the design of the hardware system by the interface it has with the Product Support environment in which it must operate.

Examples of these Product Support S design parameters are shown below:

- Reliability and Maintainability
- Supportability Analysis
- Human Factors Engineering
- Safety Engineering
- Standardization
- Configuration Management
- Quality Assurance
- Survivability
- Automatic Test Engineering
- Failure Modes and Effects Analysis

DoD 5000.2-R, no longer specifically refers to the term "Integrated Logistics Support (ILS)." The change in terminology from ILS to Product Support is intentional. While the "integration of logistics support" is still the ultimate objective of Product Support activities, the terminology is not used partly as a signal that this is not "business as usual". In the past, programs tended to treat ILS activities in parallel to the system design activities rather than as an integral part. Product Support is intentionally included as a sub-element of Systems Engineering to convey the message that Product Support activities are design related. In other words, designing the system for support and designing the support system is where the biggest life-cycle cost savings can be achieved. Supportability (S) is mandated as a Systems Engineering performance requirement developed through the same processes used to develop other system



performance parameters. Best practices include conducting Product Support activities integral to Systems Engineering. Under DoD 5000.2 R paragraph 5.2.3.5.4

The PM shall conduct acquisition logistics management activities throughout the program life cycle. When using an evolutionary acquisition strategy, acquisition logistics activities shall address performance and support requirements for both the total life cycle and for each block, and shall consider and mitigate the impact of system variants or variations. The supportability of the design(s) and the acquisition of systems shall be cost-effective and shall provide the necessary infrastructure support to achieve peacetime and wartime readiness requirements. Supportability considerations shall be integral to all trade-off decisions.

DoD 5000.2 R Paragraph 5.2.3.5.4.1 further states

Supportability Analyses. PMs shall conduct supportability analyses as an integral part of the Systems Engineering process, beginning at program initiation and continuing throughout the program life cycle. The results of these analyses shall form the basis for the related design requirements included in the system performance specification and in the documentation of logistics support planning. The results shall also support subsequent decisions to achieve cost-effective support throughout the system life cycle. For products, this includes all new procurements and major modifications and upgrades, as well as reprourement of systems, subsystems, components, spares, and services that are procured beyond the initial production contract award.

Defense Acquisition Management Framework

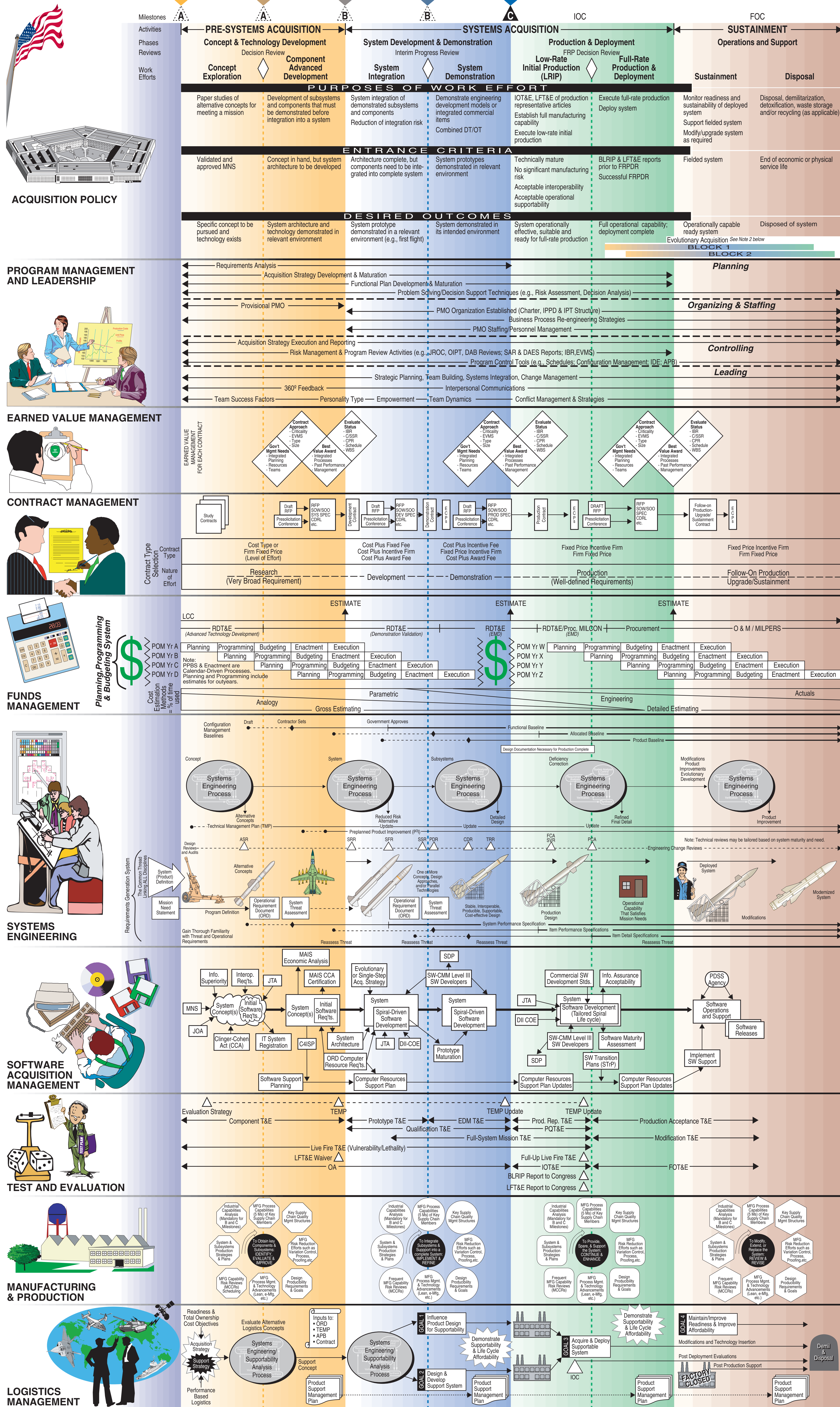
**Chart:** The pictorial overview of the Defense Systems Acquisition Life Cycle functional activities is used as a training aid for the Defense Systems Management College (DSMC) courses. The chart (attached) is provided as reference information and use.

**Documentation:** The supporting acquisition information for the chart (normally printed on the back of the chart) is also provided (attached) for your reference information and use.





# DEFENSE ACQUISITION MANAGEMENT FRAMEWORK





# Defense Acquisition Management Framework

## HOW TO OBTAIN COPIES

1. Download directly from the Defense Acquisition University (DAU) Press web site at: <http://www.dau.mil>.

2. Military and government employees can obtain a **single** copy from the DAU Publications Distribution Center, located in the lower floor of building 204, at Defense Systems Management College (DSMC), Ft. Belvoir campus. A copy can also be obtained by sending a written request for DSMC Chart Number 3000R4 to the DAU Publications Distribution Center.

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3. Military, government and non-government personnel can purchase single or multiple copies through the Government Printing Office through their online bookstore at <http://bookstore.gpo.gov>. Orders can also be placed with credit card on the phone (202) 512-1800 or FAX (202) 512-2250.

## I. INTRODUCTION

DSMC POC: Larry Heller; (703) 805-4657

The Defense Acquisition Management Framework Chart is a training aid for Defense Systems Management College (DSMC) courses and is designed to serve as a pictorial roadmap of functional activities throughout the Defense Systems Acquisition Life Cycle. This chart is based on the policies in Department of Defense (DoD) 5000 Series documents. These consist of:

- DoD Directive (DoDD) 5000.1, *The Defense Acquisition System*;
- DoD Instruction (DoDI) 5000.2, *Operation of the Defense Acquisition System*; and
- Interim Regulation DoD 5000.2-R, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs*.

The final DoD 5000.2-R is expected to be released in the Spring of 2001. The *Defense Acquisition Deskbook* describes discretionary information and best practices for implementing defense acquisition. This chart is **not** a substitute for these references.

This chart provides the basic information needed to help understand the Defense Acquisition Life Cycle Process. For additional information, please use the reference materials indicated above or contact the department point of contact (POC) associated with each section of the chart. Department POCs can further explain their respective sections on the chart.

There is no single, approved taxonomy of the functional disciplines and sub-disciplines that, taken together, constitute defense systems acquisition. Acquisition career fields have been established under the auspices of DoD 5000.52-M; *Career Development Program for Acquisition Personnel*, for both military and civilian members of the Defense Acquisition Workforce.

## II. ACQUISITION POLICY

DSMC POC: Acquisition Policy Department; (703) 805-5144

The Defense Acquisition Management Framework is structured by DoDI 5000.2 into discrete, logical phases separated by major decision points (called milestones) to provide the basis for comprehensive management and progressive decision making. The number of phases and decision points are tailored to meet the specific needs of individual programs.

The systems acquisition process begins with the identification of a need. It encompasses the activities of design, test, manufacture, operations and support. It may involve modifications and it ends with the disposal/recycling/demilitarization of that system. Upgrade (or modification) programs also follow the acquisition life cycle that includes the activities of design, test, manufacture, installation and checkout, plus operations and support.

The following policies and principles govern the operation of the defense acquisition system and are divided into five major categories as stated in DoDD 5000.1. These categories are: 1) Achieving Interoperability, 2) Rapid and Effective Transition from Science and Technology to Products, 3) Rapid and Effective Transition from Acquisition to Deployment and Fielding, 4) Integrated and Effective Operational Support, and 5) Effective Management.

To implement these varied policies and principles, many unique requirements, laws, and regulations are imposed on defense acquisition that still burden pro-

gram managers in pursuing the efficiencies inherent in pure commercial acquisition practice.

DoD components first try to satisfy mission needs through nonmateriel solutions, such as changes in doctrine or tactics. If existing U.S. military systems or other on-hand materiel cannot be economically used or modified to meet the operational requirement, a materiel solution may be pursued according to the following hierarchy of alternatives:

- Procurement (including modification) of commercially available domestic or international technologies, systems or equipment, or Allied systems or equipment
- Cooperative development program with one or more Allied nations
- New joint Component or Government Agency development program
- New Component-unique development program

A complete listing of statutory and regulatory program information requirements (documentation) applicable to all programs can be found in Enclosure 3, DoDI 5000.2. The Milestone Decision Authority (MDA) may tailor document content based on program needs, but it may not omit documents required by statute or mandatory policy (e.g., Acquisition Program Baseline or Operational Requirements Document). (Figure 1)

**Acquisition Strategy.** A plan that serves as a roadmap for program execution from program initiation through post-production support. Acquisition Category (ACAT) I and IA Programs must contain information as noted in Figure 2.

**FIGURE 1. INFORMATION FOR MILESTONE REVIEWS (DODI 5000.2)**

	Milestone/Review					
	A	DR	B	IPR	C	FRPDR
Acquisition Decision Memorandum	X	X	X	X	X	X
Acquisition Program Baseline		Note 1	X		X	X
Acquisition Strategy		Note 1	X		X	X
Affordability Assessment			X		X	
Analysis of Multiple Concepts	X					
Analysis of Alternatives			X		Note 3	
Application for Frequency Allocation			X		X	
Beyond Low Rate Initial Production (LRIP) Report (Note 2)						X
Command, Control, Communications, and Computers (C4) Integrated Support Plan		Note 1	X		X	
Clinger-Cohen Act Compliance [all Information Technology (IT)]		Note 1	X		X	X
Compliance with Strategic Plan			X		X	
Component Cost Analysis [Major Automated Information System (MAIS); optional MDAP]			X			X
Consideration of Technology Issues	X		X		X	
Cooperative Opportunities			X		X	X
Cost Analysis Requirements Description [Major Defense Acquisition Programs (MDAPs)]			X		X	X
Economic Analysis (MAIS)			X			
Exit Criteria	X	X	X	X	X	X
Independent Cost Estimate (MDAPs; n/a AIS)			X		X	X
Independent Technology Assessment			X		X	
Interoperability Certification						X
IT Certification (MAIS)		X	X		X	X
Live Fire Testing & Evaluation (T&E) Waiver (covered systems) (Note 2)			X			
Live Fire T&E Report (covered systems) (Note 2)						X
LRIP Quantities			X			
Manpower Estimate			X			X
Market Research	X		X			
Mission Need Statement	X					
National Environmental Policy Act Schedule		Note 5	X		X	X
Operational Requirements Document			X		X	
Operational Test & Evaluation (OT&E) Results			X		X	X
Postdeployment Performance Review						X
Program Protection Plan			X		X	
Registration of Mission Critical & Mission Essential Information System		Note 5	Note 5		Note 5	
System Threat Assessment (n/a AIS)			X		X	
Selected Acquisition Report (MDAPs)		Note 5	X		X	X
Test & Evaluation Master Plan	Note 4		X		X	X

Notes: 1. At entry to Component Advanced Development (CAD) if CAD is program initiation. 2. OSD T&E oversight programs. 3. If no Milestone B.  
4. Evaluation strategy for Mission Need Statement (MNS) due 180 days after Milestone A. 5. If program initiation.

**FIGURE 2. ACQUISITION STRATEGY ELEMENTS (INTERIM DOD 5000.2-R)**

<ul style="list-style-type: none"> <li>• Requirements <ul style="list-style-type: none"> <li>– Approved Source Docs</li> <li>– Status of In-process Source Docs</li> </ul> </li> <li>• Program Structure</li> <li>• Acquisition Approach</li> <li>• Risk</li> <li>• Program Management <ul style="list-style-type: none"> <li>– Resources <ul style="list-style-type: none"> <li>- Advance Procurement</li> <li>- PMO Staffing &amp; Support</li> </ul> </li> <li>– Info Sharing &amp; DoD Oversight</li> <li>– IDE</li> <li>– Tech Reps at Contractor Facilities</li> <li>– Government Property In Possession of Contractors</li> <li>– Tailoring &amp; Streamlining <ul style="list-style-type: none"> <li>- Requests for Relief or Exemption</li> <li>- Applying Best Practices</li> </ul> </li> <li>– Planning for Modeling &amp; Simulation</li> <li>– Independent Expert Review of Software Intensive Programs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Design Considerations <ul style="list-style-type: none"> <li>– Open Systems</li> <li>– Interoperability <ul style="list-style-type: none"> <li>- IT Interoperability</li> <li>- Other than IT Integration</li> </ul> </li> <li>– IT Supportability</li> <li>– Protection of Critical Program Info &amp; Anti-Tamper Provisions</li> </ul> </li> <li>• Support Strategy <ul style="list-style-type: none"> <li>– Product Support <ul style="list-style-type: none"> <li>- Management Plan</li> <li>- Integration</li> </ul> </li> <li>– Source of Support <ul style="list-style-type: none"> <li>- Depot Maintenance</li> <li>- Supply</li> <li>- Contractor Log Support</li> </ul> </li> <li>– Human Sys Integration</li> <li>– Environmental Safety &amp; Occupational Health</li> <li>– Demilitarization &amp; Disposal <ul style="list-style-type: none"> <li>- Life Cycle Support Oversight</li> </ul> </li> <li>– Post Deployment Evaluation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Business Strategy <ul style="list-style-type: none"> <li>– Competition <ul style="list-style-type: none"> <li>- Fostering a Competitive Environment</li> <li>- Competition Advocates</li> <li>- Ensuring Future Competition</li> </ul> </li> <li>– Building Competition Into Strategies <ul style="list-style-type: none"> <li>- Acquisition Phases</li> <li>- Evolutionary Acquisition</li> <li>- Industry Involvement</li> </ul> </li> <li>– Potential Obstacles <ul style="list-style-type: none"> <li>- Exclusive Teaming</li> <li>- Sub-Tier Competition</li> </ul> </li> <li>– Potential Sources <ul style="list-style-type: none"> <li>- Market Research</li> <li>- Commercial &amp; NDI</li> <li>- Dual-Use Tech &amp; Comm Plants</li> <li>- Industrial Capability</li> </ul> </li> <li>– SBIR Technologies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– International Cooperation <ul style="list-style-type: none"> <li>- Cooperative Strategy</li> <li>- Interoperability</li> <li>- Compliance</li> <li>- Testing Required for Foreign Military Sales</li> </ul> </li> <li>– Contract Approach <ul style="list-style-type: none"> <li>- Major Contracts Planned</li> <li>- Contract Type</li> <li>- Contract Incentives</li> <li>- Performance Mgmt</li> <li>- Integrated Baseline Reviews</li> <li>- Special Terms &amp; Conditions</li> <li>- Warranties</li> <li>- Component Breakout</li> </ul> </li> <li>– Leasing</li> </ul>
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From DoDI 5000.2-R, Table 1

- Partnering Analysis
- Make or Buy Analysis
- Core Logistics Analysis/ Source of Supply Analysis

### III. PROGRAM MANAGEMENT AND LEADERSHIP

DSMC POC: Program Management and Leadership Department; (703) 805-4985

Fundamental change in the DoD acquisition culture is underway and requires individuals and organizations to change from a hierarchical decision-making process to one where decisions are made across organizational structures by multidisciplinary teams known as Integrated Product Teams (IPTs). Successful Program Managers (PMs) must be leaders who can create a vision for their program, translate this into a concrete mission, break the mission down into critical success factors (goals), and nurture and develop the IPTs (via empowerment and teamwork) to successfully execute acquisition programs. Under DoDD 5000.1, DoDI 5000.2, and DoD 5000.2-R, the preferred program management technique for use by a PM is known as Integrated Product and Process Development (IPPD). The goal of IPPD is to optimize the technology, design, manufacturing, plus business and supportability processes by integrating all acquisition activities from requirements definition through development, production, deployment and operations support. IPPD is an expansion of concurrent engineering where design, manufacturing and support of a system are integrated through the use of IPTs.

**The primary program management activities are as follows:**

**Planning:** One of the first program management planning activities is the development of the acquisition strategy, which lays out how the program will accomplish its objectives in terms of (among others) cost, schedule, performance, risk, and contracting activities. For decision, interim progress, and milestone reviews, it is included as part of a single document (to the maximum extent practicable). The PM may choose to develop the acquisition strategy as a stand-alone document or as part of a multipurpose document (e.g., an Army Modified Integrated Program Summary (MIPS), a Navy Master Acquisition Program Plan (MAPP), or an Air Force Single Acquisition Management Plan (SAMP)). Each program's acquisition strategy is tailored to meet the specific requirements and circumstances of the program. There

are two basic strategy approaches — Evolutionary and Single Step to Full Capability. Evolutionary is the preferred approach and delivers an initial capability with the explicit intent of delivering improved or updated capability in the future. See Part II of this chart for acquisition strategy elements.

**Organizing and Staffing:** The establishment, organization, and staffing of the program office should be a direct outgrowth of a task analysis that supports the program's acquisition strategy. As the program evolves, the program office organization and staffing should also evolve to support the changing task requirements and acquisition environment.

**Controlling:** The control system consists of standards against which progress can be measured, a feedback mechanism that provides information to a decision maker, and a means to make corrections either to the actions underway or to the standards. Examples of standards used in the systems acquisition process includes the Acquisition Program Baseline (APB), exit criteria, program schedules, program budgets, specifications, plans, and test criteria. Examples of feedback mechanisms for program control, oversight, and risk management include the Joint Requirements Oversight Council (JROC), Overarching Integrated Product Team (OIPT), Defense Acquisition Board (DAB), Integrated Baseline Review (IBR), technical reviews, and Developmental and Operational Test and Evaluation (D/OT&E). Other reports available through a Program's Integrated Digital Environment (IDE) include the Selected Acquisition Report (SAR), Defense Acquisition Executive Summary (DAES), Earned Value Management (EVM) Report, and Contract Funds Status Report (CFSR).

**Leading:** Effective leadership is the key to program success. It involves developing an organization's mission, vision, and goals, and clearly articulating a set of core values. Dominant leadership roles in program management include strategy setting, consensus/team building, systems integration, and change management. For successful teams, factors such as empowerment, clear purpose, open communication, adequate resources, and a team-behavioral environment are critical.

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### IV. EARNED VALUE MANAGEMENT

DSMC POC: Earned Value Management Department; (703) 805-3769

**Earned Value Management:** The use of an integrated management system to coordinate work scope, schedule, and cost goals and objectively measure progress toward those goals.

**Earned Value Management Systems (EVMS):** Management standards (for significant dollar threshold contracts) used to evaluate an organization's integrated management systems.

**Cost Performance Report (CPR):** An objective summary of contract status that includes the following:

***Budgeted Cost of Work Scheduled (BCWS)*** - Value of work scheduled in budget terms.

***Budgeted Cost of Work Performed (BCWP)*** - Value of work completed in budget terms.

***Actual Cost of Work Performed (ACWP)*** - Cost of work completed.

**Cost/Schedule Status Report (C/SSR):** A reasonably objective summary of contract status in terms of BCWS, BCWP, and ACWP.

**Work Breakdown Structure (WBS):** A product-oriented family tree composed of hardware, software, services, and data, which comprise the entire work effort under a program.

**Integrated Baseline Review (IBR):** A joint Government/Contractor assessment of the performance measurement baseline (PMB).

## V. CONTRACT MANAGEMENT

DSMC POC: Contract Management Department; (703) 805-3442

**Contract Management** is the process of systematically planning, organizing, executing, and controlling the mutually binding legal relationship obligating the seller to furnish supplies and/or services and the buyer to pay for them.

**Contract:** The document that definitizes the government/industry agreement.

**A Draft Request for Proposal (RFP) and Presolicitation Conference:** are used to ensure that the requirements are understood by industry and that feedback is provided to the government.

**Cost Type Contract:** A family of cost-reimbursement type contracts, where the government pays the cost (subject to specified limitations) and the contractor provides “best efforts.” This type may provide for payment of a fee that may consist of an award fee, incentive fee, or fixed fee.

**Engineering Change Proposal (ECP):** A formal document used to make engineering changes to configuration management baselines in an existing contract.

**Fixed Price Type Contract :Firm Fixed Price(FFP) or Fixed Price Incentive(FPI):** A family of fixed-price type contracts where the government pays a price that is subject to specified provisions, and the contractor delivers a product or service. This type may provide for payment of incentives or other sharing arrangements.

**Statement of Work(SOW); Statement of Objective(SOO) Specification, Contract Data Requirement List(CDRL):** The documents used in soliciting contracts for each phase of work the RFP sets forth the needs; the SOW/SOO is the formal statement of these needs as requirements for contractual effort (what the contractor will do); The specification sets forth the technical requirements (what the system will do), and the CDRL definitizes the data deliverables.

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## VI. FUNDS MANAGEMENT

DSMC POC: Funds Management Department; (703) 805-2451

**Government Budget Plan:** The generic title for an internal government document that plans the long-range budgeting strategy for the life of a given program.

**Planning, Programming and Budgeting System (PPBS):** The PPBS is a time-driven resource allocation process within DoD to request funding for all operations, including weapon system development and acquisition. It is essential to convert each program’s event-driven acquisition strategy and phasing into the PPBS’s calendar-driven funding profiles to assure the appropriate amount and type of funds are available to execute the desired program.

**Planning Phase** – The Defense Planning Guidance (DPG) is a document which sets forth broad policy objectives and military strategy. The DPG guides the development of the Program Objectives Memorandum (POM).

**Programming Phase** – The POM and the Program Decision Memorandum (PDM) are the keystone documents completed in this phase. The POM provides strategies for the Services to meet DoD objectives outlined in the DPG. The POM is reviewed by staff officers of the Secretary of Defense, the Commanders in Chief of unified and specified commands, and the Joint Chiefs of Staff. The reviews highlight major program issues and alternatives. The Deputy Secretary of Defense reviews the POM and the issues and decides on the appropriate course of action. The decisions are documented in the PDM.

**Budgeting Phase** – The completion of the Budget Estimate Submission (BES). The BES is the POM documentation updated for the decisions outlined in the PDM. The BES is reviewed by the Under Secretary of Defense Comptroller, and the Office of Management and Budget (OMB) for execution feasibility. Funding changes that are due to execution issues are identified in Program Budget Decisions (PBDs). The updated BES is forwarded to OMB and incorporated into the President’s Budget. The President’s Budget is due to the Congress no later than the first Monday in February.

**Enactment** – The process that the Congress uses to develop and pass the Authorization and Appropriations Bills. In the enactment process, the DoD

has an opportunity to work with the Congress and defend the President’s Budget.

### Funding Appropriation Types:

#### RDT&E:

**Budget Activity 1, Basic Research,** includes all efforts and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

**Budget Activity 2, Applied Research,** translates promising basic research into solutions for broadly defined military needs, short of development projects. This type of effort may vary from systematic mission-directed research, which is beyond that in Budget Activity 1, to sophisticated breadboard hardware, study, programming, and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges.

**Budget Activity 3, Advanced Technology Development,** includes all efforts that have moved into the development and integration of hardware for field experiments and tests. The results of this type of effort are proof of technological feasibility and assessment of operability and producibility rather than the development of hardware for service use.

**Budget Activity 4, Demonstration and Validation,** includes all efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology.

**Budget Activity 5, Engineering and Manufacturing Development,** includes those projects in engineering and manufacturing development that are for Service use but have not received approval for full-rate production.

**Procurement** is used to finance investment items, and it should cover all costs integral and necessary to deliver a useful end item intended for operational use or inventory.

**Military Construction (MILCON)** funds the cost of major construction projects such as bases, facilities, military schools, etc. Project costs include architecture and engineering services, construction design, real property acquisition costs, and land acquisition costs necessary to complete the construction project.



**Military Personnel (MILPERS)** funds the costs of salaries and compensation for active military and National Guard personnel as well as personnel-related expenses such as costs associated with permanent change of duty station (PCS), training in conjunction with PCS moves, subsistence, temporary lodging, bonuses, and retired pay accrual.

**Operation and Maintenance (O&M)** traditionally finances those things that derive benefits for a limited period of time, i.e., expenses, rather than investments. Examples of costs financed are Headquarters operations, civilian salaries and awards, travel, fuel, minor construction projects of \$500K or less, expenses of operational military forces, training and education, recruiting, depot maintenance, purchases from Defense Working

Capital Funds (e.g., spare parts), base operations support, and assets with a system unit-cost less than the current procurement threshold (\$100K).

**Cost Estimating** is a realistic appraisal of the level of cost most likely to be realized. The main estimation methods are analogy, parametric, engineering, and extrapolation from actual costs.

**Life Cycle Cost (LCC)** is the total cost to the government of acquisition and ownership of the system over its full life. It includes the cost of development, acquisition, support, and (where applicable) disposal. The USD (AT&L) has defined Defense System Total Ownership Cost (TOC) as Life Cycle Cost.

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## VII. SYSTEMS ENGINEERING

DSMC POC: Systems Engineering Department; (703) 805-3465

The Systems Engineering (SE) Process controls the total system development effort for the purpose of achieving an optimum balance of all system elements. It is designed to translate operational need and/or requirements into a system solution that includes the design, manufacture, Test and Evaluation (T&E) and support processes and products. SE is used to establish a proper balance among performance, risk, cost, and schedule. It does this by recursively applying the subprocesses of requirements analysis, functional analysis and allocation and design synthesis and verification along with the systems analysis and control tools for balance.

### A. Configuration Management (CM) Baselines -

- **Functional Baseline** - The technical portion of the program requirements (system performance specification) that provides the basis for contracting and controlling the system design. It is normally established by the government at System Functional Review (SFR).
- **Allocated Baseline** - Defines the performance requirements for each configuration item of the system (item performance specifications). The contractor normally establishes this early in the process [not later than the Preliminary Design Review (PDR)]. Government control is typically deferred until System Verification Review (SVR).
- **Product Baseline** - Established by the detailed design documentation for each configurations item (item detail specifications). It includes the process and materials baseline (process and materials specifications). Government control depends of program requirements but, if established, is typically done at PCA.

**B. Preplanned Product Improvement (P<sup>3</sup>I)** - A deliberate decision delaying incorporation of a system capability but providing growth allocations for the capability.

**C. Technical Management Plan (TMP)** - The TMP defines the contractor's plan for the conduct and management of the fully integrated effort necessary to satisfy the general and detailed requirements as implemented by the Request for Proposal (RFP) or contract schedule, statement of work/objectives, and specifications.

### D. Design Reviews and Audits

1. **ASR - Alternative Systems Review** - A formal review conducted to demonstrate the preferred system concept(s).
2. **SRR - System Requirements Review** - A formal, system-level review conducted to ensure that system requirements have been completely and prop-

erly identified and that there is a mutual understanding between the government and contractor exists.

3. **SFR - System Functional Review** - A formal review of the conceptual design of the system to establish its capability to satisfy requirements. It establishes the functional baseline.
4. **SSR - Software Specification Review** - A formal review of requirements and interface specifications for computer software configuration items.
5. **PDR - Preliminary Design Review** - A formal review which confirms that the preliminary design logically follows the SFR findings and meets the requirements. It normally results in approval to begin detailed design.
6. **CDR - Critical Design Review** - A formal review conducted to evaluate the completeness of the design and its interfaces.
7. **TRR - Test Readiness Review** - A formal review of the contractors' readiness to begin testing computer software configuration items.
8. **FCA - Functional Configuration Audit** - A formal review conducted to verify that all subsystems can perform all of their required design functions in accordance with their functional and allocated configuration baselines.
9. **SVR - System Verification Review** - A formal review conducted to verify that the actual item (which represents the production configuration) complies with the performance specification.
10. **PCA - Physical Configuration Audit** - A formal review that establishes the product baseline as reflected in an early production configuration item.

**E. System/Product Definition** - This is the natural result of the threat-opportunity-driven Requirements Generation System and the common thread (or area of common interest) among all acquisition disciplines.

1. **Mission Need Statement (MNS)** - A formal document, expressed in broad operational terms and prepared in accordance with Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 13170.01A, that documents deficiencies in current capabilities and opportunities to provide new capabilities.
2. **Program Definition** - The process of translating broadly stated mission needs into a set of operational requirements from which specific performance specifications are derived.
3. **Operational Requirements Document (ORD)** - A formatted statement, which is prepared by the user or user's representative, containing operational performance parameters for the proposed concept/system that defines the system capabilities needed to satisfy the mission need. It is prepared at each milestone, usually beginning with Milestone B.
4. **System Threat Assessment & Projections** - Prepared by a collaboration among the intelligence, requirements generation, and acquisition management communities to support program initiation (usually Milestone B). It is maintained in a current and approved or validated status throughout the acquisition process.

## VIII. SOFTWARE ACQUISITION MANAGEMENT

DSMC POC: Software Management Department; (703) 805 3788

Modern DoD systems are almost always *software-intensive*, in which software is the largest segment of: cost; system development risk; system functionality, or development time.

The DoD 5000 Series integrates policy requirements and management guidance for all categories of software-intensive systems, including Automated Information Systems (AISs).

An AIS is an acquisition program that acquires Information Technology (IT), except those IT systems that: (1) involve equipment integral to a weapon or weapons system, or (2) is a tactical communication system. A Major AIS (MAIS) is one which exceeds certain cost thresholds specified by DoD policy or otherwise designated as such by the ASD (C3I)

Evolutionary acquisition and spiral software development models are strongly emphasized by current DoD policies. For many software-intensive systems, outside formal assessments of program fitness by independent expert review teams are also mandated.

Because of the broad scope of DoD software-intensive systems, a wide variety of tailorable approaches to their life cycle management and development is possible following DoD acquisition policies. One such phased approach is:

**Concept and Technology Development:** Key pertinent capability enablers that can directly impact system software requirements include Clinger-Cohen Act (CCA) compliance, information superiority (DoDD 8000.1 and DoDI 8320.1), interoperability requirements (DoDD 4630.5 and DoDI 4630.8) and use of DoD standard architectures such as the joint Operational Architecture (JOA) and the Joint Technical Architecture (JTA). Exit criteria from this phase typically include system architecture definition and an acceptable level of software product maturity. For C4I systems, a support plan (C4ISP) is required. Additionally, a software developer's level of process maturity is cited for particular emphasis by DoD acquisition policy. Models such as the Software Capability Maturity Model (SW-CMM) or its equivalent are used to assess developer process maturity. For a MAIS, an economic analysis and formal CCA certification are required. Initiation of early planning for Post Deployment Software Support (PDSS) starts.

**Systems Development and Demonstration:** Depending on the type of software-intensive system, key activities could include:

- Selection of an Evolutionary or Single-Step overall System Acquisition Strategy.
- Spiral-driven software development activities including prototype maturation.
- Selection of competent software developers that have mature development processes, domain experience and relevant tool experience.
- Selection and mutual tailoring of appropriate software development standard(s).
- Risk-driven software metrics selection, based on service policies and the Practical Software Measurement (PSM) methodology.
- Generation of a Software Development Plan (SDP) and other plans by a developer.
- Continuation of planning for Post Deployment Software Support (PDSS) and development of initial computer resources plans by the acquisition office.

**Production & Deployment:** Key activities include continued refinement of software work products from the previous phase and also could include:

- Continuing assessments of the developer's maturity using techniques such as the Software Capability Evaluation (SCE) based on the SW-CMM or other methods.
- Employment of JTA-compliant software components from DoD repositories such as the Defense Information Infrastructure Common Operating Environment (DII-COE).
- Risk-driven software metrics and refined from previous lifecycle phases, are used to gain visibility into software development activities.
- Determination of an acceptable level of software product maturity prior to deployment.
- Developer generation of key management plans such as a Software Transition Plan (STRP), that document technical requirements and resources needed for PDSS.
- Acquisition office updates of various internal computer resources plans.
- Development of Software Installation Plans (SIPs) if appropriate.
- Control and timing of block releases if required as part of evolutionary acquisition.
- Determination that the system has an acceptable level of information assurance

**Operations and Support:** Post Deployment Software Support (PDSS) activities, by far the largest cost component of the software lifecycle, are initiated for the Sustainment portion of this phase following the chosen software support concept documented in computer resource plans and developer plans such as the STRP.

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## IX. TEST AND EVALUATION

DSMC POC: Test and Evaluation Department; (703) 805-2887

**Test and Evaluation (T&E)** is a process by which a system or components are compared against requirements and specifications through testing. The results are evaluated to assess progress of design, performance, supportability, etc.

**Beyond Low Rate Initial Production (BLRIP) Report:** Completed by the Director, Operational Test and Evaluation (DOT&E) to assess the Initial Operational Test and Evaluation (IOT&E) for major defense acquisition programs for the FRP Decision Review. A copy is provided to the Congress.

**Combined Developmental and Operational Testing (DT/OT):** Combining DT and OT is encouraged to achieve time and cost savings. The com-

bined approach shall not compromise either DT or OT objectives. A final independent phase of IOT&E shall still be required for Acquisition Category (ACAT) I and II programs for Beyond Low Rate Initial Production (BLRIP) decisions.

**Developmental Test and Evaluation (DT&E):** A technical test conducted to provide data on the achievability of critical system performance parameters. This testing is performed on components, subsystems, and system-level configurations of hardware and software.

**Evaluation Strategy:** a description of how the capabilities in the Mission Need Statement (MNS) will be evaluated once the system is developed. The Evaluation Strategy shall be approved by the DOT&E and the cognizant Overarching Integrated Product Team (OIPT) team leader 180 days after Milestone A approval. The Evaluation Strategy will evolve into the Test and Evaluation Master Plan (TEMP) which is first due at Milestone B.



**Follow-On OT&E (FOT&E):** OT&E needed during and after the production phase to refine estimates from the IOT&E, to evaluate system changes, and to reevaluate the system as it continues to mature in the field. FOT&E may evaluate system performance against new threats or in new environments.

**Full-Up Live Fire T&E (LFT&E):** A system-level live fire test of an ACAT I or II covered system, that is required before going BLRIP.

**Initial Operational T&E (IOT&E):** All OT&E that is conducted on production or production representative articles to support the decision to proceed BLRIP. It is conducted to provide a valid estimate of expected system operational effectiveness and suitability for ACAT I and II systems.

**Lethality T&E:** Testing the ability of a munitions to cause damage that will cause the loss or a degradation in the ability of a target system to complete its designated missions.

**Live Fire Test and Evaluation (LFT&E) Report:** Completed by the DOT&E for ACAT I and II systems that have been subjected to a full-up live fire test prior to Full Rate Production (FRP) Decision Review. Usually included in the DOT&E report of the IOT&E (BLRIP report) when sent to the Congress.

**Modification T&E:** Testing done after FRP Decision Review to evaluate modifications/upgrades/improvements to the system.

**Operational Assessment (OA):** An evaluation of operational effectiveness and suitability made by an independent operational test agency, with user support as required, on other than production systems. An OA conducted prior to Milestone B is called an Early Operational Assessment (EOA).

**Operational T&E (OT&E):** The field test, under realistic combat conditions, of any item (or key component of), weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability for use in combat by typical military users, and the evaluation of the results of such test. Required for ACAT I and II programs.

**Production Acceptance T&E (PAT&E):** T&E of production items to demonstrate that items procured fulfill the requirements and specifications of the procuring contract or agreements.

**Production Qualification T&E (PQT&E):** A technical test conducted to ensure the effectiveness of the manufacturing process, equipment, and procedures. These tests are conducted on a number of samples taken at random from the first production lot and are repeated if the design or process is changed significantly.

**Qualification Testing:** Testing that verifies the contractor's design and manufacturing process and provides a performance parameter baseline for subsequent tests. (Best Practice)

**Test and Evaluation Master Plan (TEMP):** The testing strategy in the TEMP for ACAT I and IA programs shall focus on the overall structure, major elements, and objectives of the test and evaluation program that is consistent with the acquisition strategy.

**Vulnerability T&E:** Testing a system or component to determine if it suffers definite degradation as a result of having been subjected to a certain level of effects in an unnatural, hostile environment. A subset of survivability.

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## X. MANUFACTURING AND PRODUCTION

DSMC POC: Manufacturing Management Department; (703) 805-3763

**Manufacturing** (also referred to as Production) is the conversion of raw materials into products and/or components through a series of manufacturing procedures and processes.

**Manufacturing Management** is the technique of planning, organizing, directing, controlling, and integrating the use of people, money, materials, equipment, and facilities to accomplish the manufacturing task economically.

An Acquisition Strategy outlines the approach to obtaining a certain amount of a product or system, within a planned timeframe and funding. The desired product or system has to be manufactured/produced, to a quality level that provides confidence the system will perform as advertised. The Production Strategy is the approach to obtaining the total quantity of the system, at some rate, for some cost. The Production Strategy must match up with the Acquisition Strategy.

The role of Manufacturing during the “pre-production” period is to influence the design of the subsystems and system, and to prepare for production. Once production has been authorized, the role of manufacturing is to execute the manufacturing plan. The overall objective of Manufacturing is to provide a uniform, defect-free product with consistent performance, and a lower cost in terms of both time and money.

The focus of manufacturing “pre-production” efforts are to assure the system/subsystem designs are producible, and that the “factory floors” in the Supply

Chain that will produce the items are properly characterized. These efforts are to: identify the needed manufacturing resources and capabilities, the “5Ms”; the risks associated with providing them; and insure that those risks are addressed as part of the overall Program Risk Management Plan.

The Manufacturing Plan is a formal description of a method for employing the facilities, tooling, and personnel resources to produce the design. The manufacturing plan must insure that the items produced reflect the design intent, that the processes are repeatable, and that process improvements are constantly pursued.

**Industrial Capability Assessment (ICA):** A legal requirement (10 USC 2440) at each milestone to analyze the industrial capability to design, develop, produce, support, and (if appropriate) restart the program.).

**The “5Ms” are:** Manpower, Materials, Machinery, Methods, and Measurement. These are five major elements of all manufacturing and production efforts, and are referred to during resource requirements risk identification & management.

**Supply Chain:** All organizations directly associated with the flow and transformation of materials and related information, from source to end user.

**Variation Control:** Identification of key process and product characteristics, and reduction/elimination of significant differences from the nominal values of those characteristics —so that those differences would not cause unacceptable degradation in product cost, quality, delivery schedule, or performance.

**Process Proofing:** Demonstration of all 5Ms of the required manufacturing capability, in a realistic, production-representative facility.

## X. MANUFACTURING AND PRODUCTION (cont.)

**Design Producibility:** A measure of the relative ease of manufacturing a product design. Emphasis is on simplicity of design and reduction in opportunities for variation during fabrication, assembly, integration and testing of components, processes, and procedures.

**Lean:** A fundamental way of thinking, intended to enable flexibility and waste reduction— *in order to* reduce costs, cycle time, and defective

products— by focusing on those actions which will provide value to the end-item customer

**e-Mfg:** The use of the Internet and all other electronic means to manage the entire manufacturing enterprise.

## XI. LOGISTICS MANAGEMENT

DSMC POC: Logistics Management Department; (703) 805-2497

**Logistics Management** is the process of “getting the right things, to the right places, at the right time, for the right cost.” Department of Defense logistics management encompasses the entire system’s life cycle to include acquisition (design, develop, test, produce and deploy), sustainment (operations and support), and disposal.

The principal goals/objectives of logistics management are to:

1. Influence product design for supportability
2. Design and develop the support system
3. Acquire and concurrently deploy the supportable system (including support infrastructure)
4. Maintain/improve readiness and improve affordability

**Support Elements**, such as the following, have traditionally been considered a framework for supportability analyses:

- |                           |  |
|---------------------------|--|
| 1. Maintenance Planning   | 6. Training and Training Support                   |
| 2. Manpower and Personnel | 7. Computer Resources Support                      |
| 3. Supply Support         | 8. Facilities                                      |
| 4. Support Equipment      | 9. Packaging, Handling, Storage and Transportation |
| 5. Technical Data         | 10. System/Design Interface                        |

**Logistics Transformation** is fundamental to acquisition reform. DoD decision makers shall integrate acquisition and logistics to ensure a superior product support process by focusing on total ownership cost, supportability as a key design and performance factor, and logistics emphasis in the systems engineering process.

**Support Strategy** is part of the acquisition strategy and an integral part of the systems engineering process. The support strategy shall address life cycle sustainment and continuous improvement of product affordability, reliability, and supportability, while sustaining readiness.

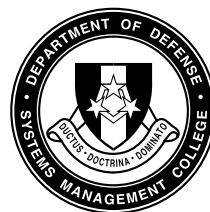
**Supportability Analyses** are a set of analytical tools used as an integral part of the systems engineering process. These tools help determine how to most cost effectively support the system throughout the life cycle and form the basis for design requirements stated in the system performance specification and Product Support Management Plan.

**Key Acquisition Documents** that reflect support inputs include the Operational Requirements Document (ORD), Test and Evaluation Master Plan (TEMP), Acquisition Program Baseline (APB) and the contract.

**Product Support Management Plan** is a life cycle plan that includes actions to assure sustainment and continually improve product affordability. This plan is used throughout initial procurement, reprourement, and post production support. The plan documents an integrated acquisition and logistics strategy for the life of the system.

**Post Deployment Evaluations** of the system, beginning at Initial Operational Capability (IOC), shall be used to verify whether the fielded system meets thresholds and objectives for cost, performance, and support parameters. Demonstration of supportability and life cycle affordability shall be entrance criteria for the Production and Deployment Phase.

**Performance Based Logistics** consists of: 1) output performance parameters to ensure system ready capability, 2) assignment of responsibilities with incentives for attainment of the goals associated with these performance parameters, and 3) overall life cycle management of system reliability, sustainment and Total Ownership Cost.



# APML HANDBOOK



## SECTION I

### *Concept and Technology Development*

## SECTION I

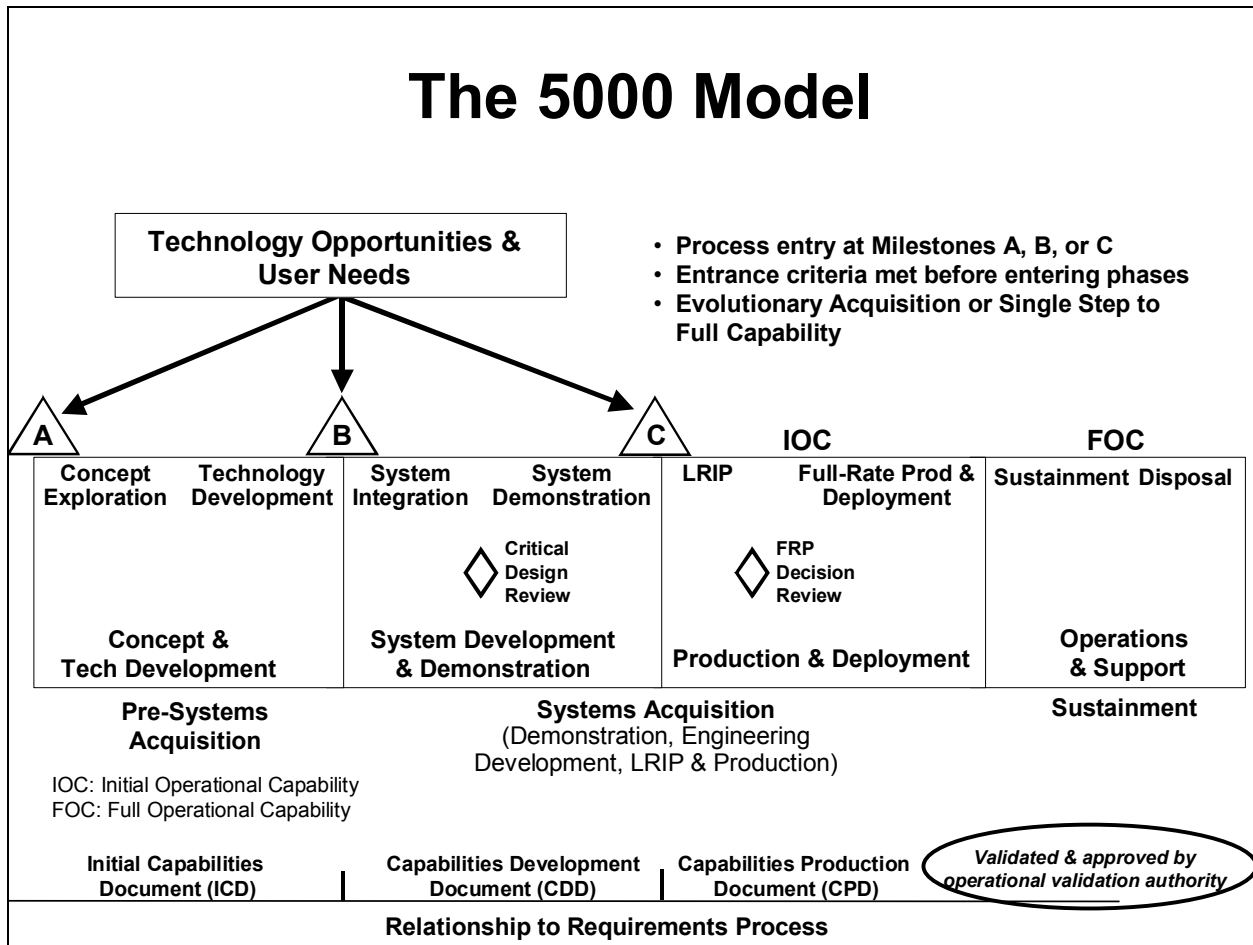
# CONCEPT AND TECHNOLOGY DEVELOPMENT

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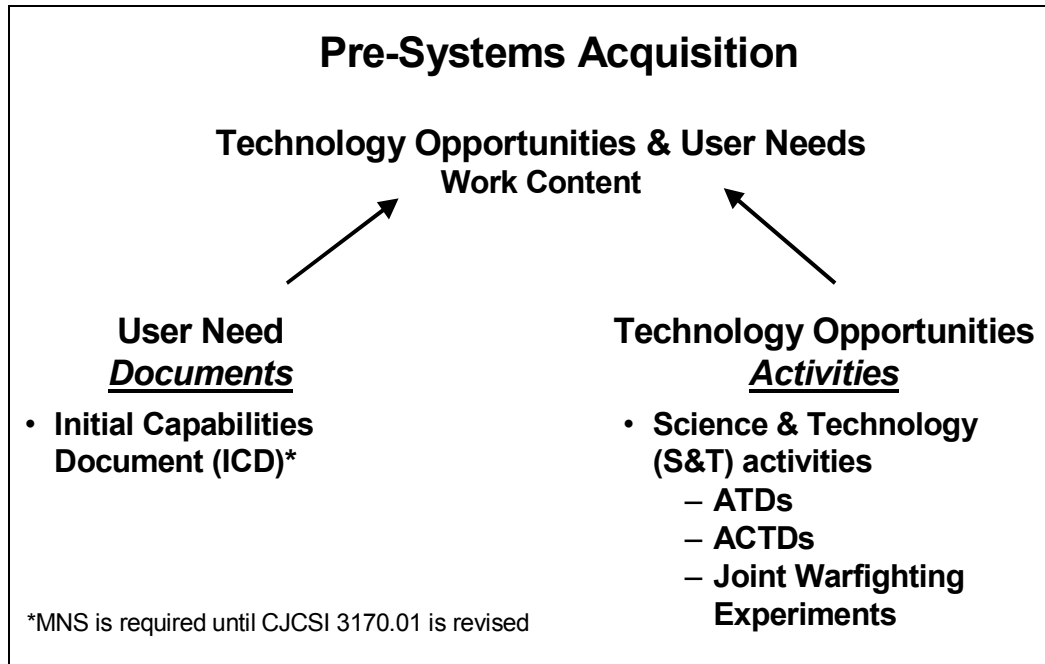
## INTRODUCTION

**Situation:**

- The Requirements and Acquisition Integration process is used to develop Integrated Architectures required for capability areas the user seeks and how to employ them
- The Integrated Architectures are then used as the basis for developing integrated plans, guide systems development and assessment plans, and to conduct capability assessments for Defense Planning Guidance (DPG), Program Objective Memorandum (POM), and Program and Budget Reviews
- Evolutionary Acquisition, Department of Defense (DoD) preferred strategy, and Spiral Development the preferred process for rapid acquisition of mature technology, is addressed.
- User needs developed are described in the Initial Capabilities Document (ICD) (supercedes the former Mission Need Statement (MNS))
- Science and technology opportunities considered
- Concept development work initiated

## ***Pre-Systems Acquisition Activity***

### ***Pre-Milestone A***



- Objective is to define required capabilities and optimize the way DoD will provide these capabilities
- Conduct of Science and Technology (S&T) activities shall not preclude, and where practicable, shall facilitate future competition

**Purpose:** Refine initial concept and reduce technical risk

**Entrance Criteria:**

- See Illustration below

**Milestone Decision Authority (MDA):**

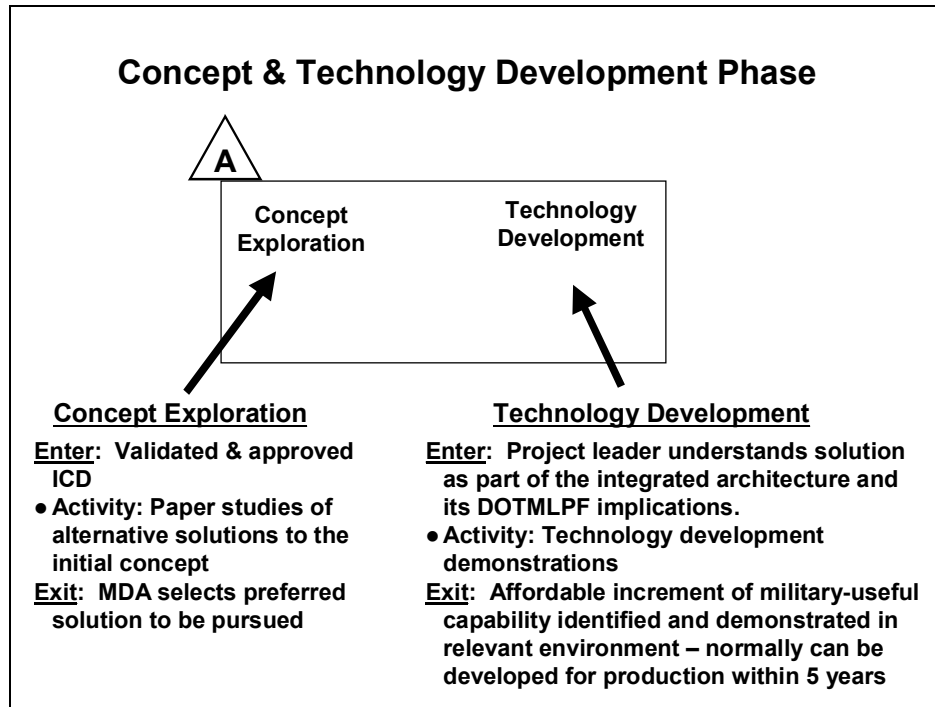
- Approves the initiation of concept studies
- Designates a lead component
- Approves Concept and Technology Development exit criteria
- Issues Acquisition Decision Memorandum

**Primary Activities:**

- See Illustration below

## Concept Technology and Development

### MILESTONE A



### APML CONSIDERATIONS:

- Opportunities to Influence cost, availability, and supportability for the solution to a material capability are greatest during this early stage of the pre-systems acquisition life cycle activities.
- Interface with knowledgeable personnel on the team, academia, industry, and within the competencies is imperative to ensure no opportunities are lost and previous supportability shortfalls are avoided on the new material capability.
- APML influence on the Program Manager for a supportable capability that has the greatest opportunity to achieve the users needs is now.
- Depending on the technology and concept maturity, the Initial Capabilities Document (ICD), early Capabilities Development Document (CDD), and product support planning concepts can be drafted that will influence entry into the next phase, Milestone B. (System Development and Demonstration (SD&D))



## APML ROLES AND RESPONSIBILITIES

CONCEPT AND TECHNOLOGY DEVELOPMENT	
<p>Known and projected resource constraints identified</p> <p>Currently fielded systems analyzed for:</p> <ul style="list-style-type: none"> <li>• Product Support costs</li> <li>• Readiness drivers</li> </ul> <p>Product support improvement targets identified:</p> <ul style="list-style-type: none"> <li>• alternative operational and Product Support concepts</li> <li>• implication of alternative operational and Product Support concepts on resources</li> <li>• alternative strategies, including accelerated acquisition</li> <li>• Program requirements</li> <li>• Resource impact</li> <li>• Risk reduction measures</li> </ul> <p>Logistic technologies for insertion into proposed concepts identified</p> <p>Feasible Product Support concepts developed and investigated (organic, Performance Based Logistics (PBL), Direct Vendor Delivery (DVD), Prime Vendor Support (PVS), Commercial Logistics Support (CLS))</p> <p>System design influenced</p> <p>Baseline operational scenarios defined for most promising system concepts</p> <p>Projected system transportability requirements identified and evaluated against existing assets and impact upon strategic deployment</p> <p>Logistics and system design parameters identified (including testability) critical to measurement and attainment of system readiness and support cost objectives</p> <p>Draft ALSP and milestones developed for each Product Support function (Acquisition Logistics Support (ALS) element)</p> <p>Evaluate Product Support resource implications of alternative operational and Product Support concepts</p>	<p><b>Upon APML designation and assignment:</b></p> <p>Establish logistics management team as appropriate</p> <p>Establish current program status and initiate required supportability activities and analysis</p> <p>Analyze currently fielded systems for manpower requirements</p> <p>Evaluate potential implications of alternative operational and Product Support concepts on Manpower quantities by;</p> <ul style="list-style-type: none"> <li>• Skills</li> <li>• Aptitude</li> <li>• Training concept and resources</li> <li>• Facilities</li> </ul> <p>Initiate Logistics Requirements Funding Summary (LRFS) to document requirements and funding</p> <p>Identify required Independent Logistics Assessment (ILA) requirements</p> <p>Identify Product Support contractual requirements</p> <p>Initiate Acquisition Logistics Support Plan (ALSP) for next Work Effort</p> <p>Prepare Product Support inputs to ALSP</p> <p>Provide inputs to Test and Evaluation Master Plan (TEMP)</p> <p>Identify CM interface program</p> <p>Identify Maintenance Concept</p> <p>Evaluate maintenance requirements for:</p> <ul style="list-style-type: none"> <li>• Organization (O)-level</li> <li>• Intermediate (I)-level</li> <li>• Depot (D)-level</li> </ul> <p>Identify maintenance contractual requirements</p> <p>Identify Supply Support concept</p> <p>Identify Supply Support contractual requirements</p> <p>Initiate Training Planning Program Methodology (TRPPM) analysis</p> <p>Initiate training Equipment Facility Requirement (EFR) Plan</p>





## APML ROLES AND RESPONSIBILITIES (cont.)

CONCEPT AND TECHNOLOGY DEVELOPMENT	
<p>Product Support considerations integrated into Request For Proposals (RFP), Contract Data Requirements List (CDRL), and instructions to offerors including source selection evaluation factors and contracts</p> <p>Initial facilities procurement strategy developed so facilities funding can be established with emphasis on types and scope, based on experience with similar systems, with focus on prime system test and evaluation needs</p> <p>Additional resources identified (including test articles) and management actions for accelerated acquisition strategies to control Product Support risks and execute Product Support development program</p> <p>Support resource implications of alternative operational and support concepts evaluated</p> <p>Milestones for critical support elements established</p> <p>Major support related hardware and software identified (e.g., automated test stations and simulators) requiring development</p>	<p>Identify Manpower and Power (M&amp;P) contractual requirements</p> <p>Identify Facility requirements</p> <p>Identify Military Construction (MILCON) funding requirements</p> <p>Evaluate Support Equipment (SE) requirements</p> <p>Determine SE contractual requirements</p> <p>Determine Packaging, Handling, Storage, and Transportation (PHS&amp;T) program</p> <p>Identify and evaluate PHS&amp;T candidates</p> <p>Identify preliminary PHS&amp;T requirements</p> <p>Determine PHS&amp;T contractual requirements</p> <p>Establish Computer Resources Working Group (CRWG)</p> <p>Review and develop initial software and hardware requirements</p> <p>Determine the Software Support Activity (SSA)</p> <p>Begin development of support requirements for Computer Resource Life-Cycle Management Plan (CRLCMP)</p> <p>Define Computer Resource Support (CRS) security</p> <p>Initiate software system safety program</p> <p>Define CRS contractual requirements</p> <p>Develop Technical documentation requirements (e.g. technical publications, Interactive Electronic Technical Manual (IETM), drawings)</p> <p>Determine Technical documentation contractual requirements</p> <p>Coordinate engineering drawings management</p> <p>Coordinate engineering drawings contractual requirements</p>

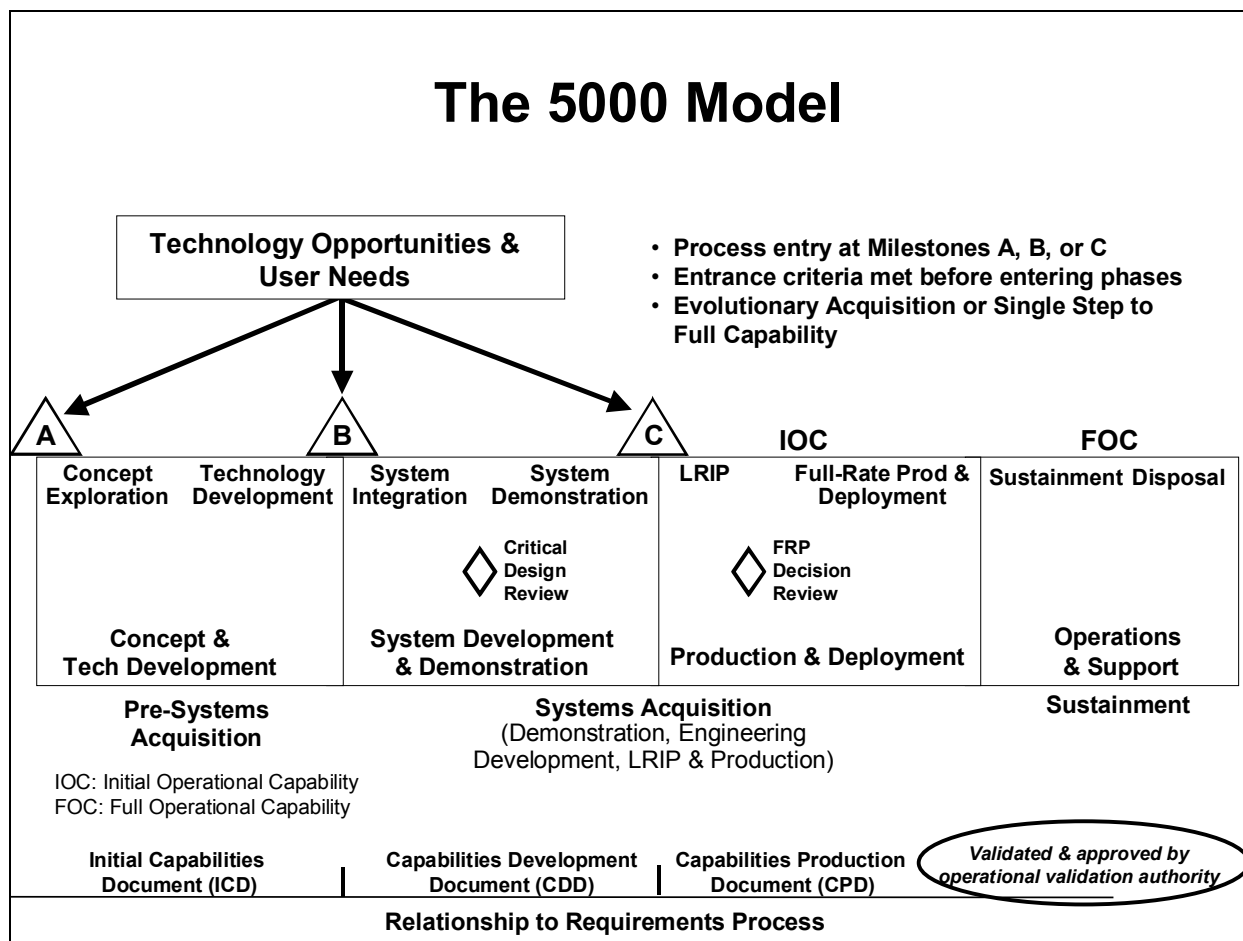
## 1.0 PHASES AND MILESTONES

### DoD 5000 Acquisition MODEL

Concept & Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Concept Exploration    Technology Development	 Critical Design Review	LRIP/OT&E  FRP Decision Review	

**WHO** – Milestone Decision Authority (MDA)

**WHAT** – Defense Acquisition Management Framework



**WHY** - Establishes a simplified and flexible management framework for translating mission needs and technological opportunities, based on validated mission needs and requirements, into stable, affordable programs

**WHEN** – Life-cycle phases, milestone decision points, and decision reviews

**WHERE** – Naval Air (NAVAIR), Integrated Product Team's (IPTs), Prime Contractor

**APML ROLE -**

- Influence Product Support considerations into system and equipment design
- Develop Product Support requirements that are related consistently to readiness objectives, to design, and to each other
- Acquire required Product Support during System Development and Demonstration, Production and Deployment and Operation and Support (O&S).
- Provide Product Support during Deployment, Operations, and Support

**HOW** – See Appendix B Acquisition Documentation, Tab B-6 DoD 5000 Model.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
C	-	Product Support Management Planning
D	-	Planning, Programming, and Budgeting System
E	-	Acquisition Strategy
F	-	Configuration Management
G	-	Performance Based Logistics
H	-	Maintenance Planning

## 2.0 MISSION NEED STATEMENT (MNS)

### NOTE:

In Accordance With (IAW) Joint Chief of Staff (JCS) Memo 7 October 2002, The MNS will be replaced by the Initial Capabilities Document (ICD) in the next revision to the Chairman Joint Chief of Staff (CJCS) Instruction 3170.01B. Current approved MNS will continue to be valid.

IAW the Deputy Secretary of Defense (DEPSECDEF) Memo dated 30 Oct 2002, the Operational Requirements Document (ORD) will be replaced by the Capabilities Development Document (CDD) at MS B and the Capabilities Production Document (CPD) at Milestone (MS) C. Current approved ORDs will continue to be valid.

### Mission Need Statement

1. Defense Planning Guidance Element
2. Mission and Threat Analysis
3. Nonmaterial Alternatives
4. Potential Material Alternative
5. Constraints
6. Joint Potential Designator

**WHO** – Chief of Naval Operations (CNO), Office of the Chief of Naval Operations (OPNAV) –N-78, CJCS, Joint Requirements Oversight Council (JROC), Head Quarters Marine Corp. (HQMC), Program Manager (PM)

**WHAT** - A non-system-specific statement of operational capability need written in broad operational terms.

Initial Capabilities Document (ICD) Replaces the MNS at MS A. Captures capability shortfall in terms of integrated architectures; identifies critical capabilities to satisfy the requirement, and best joint solution(s).

**WHY** - A material solution should be pursued.

**WHEN** - When a DoD component (Navy, United States Marine Corp. (USMC), Air Force, Army) has determined that a material solution should be pursued, a MNS will be prepared. Usually before Milestone A.

**WHERE** - DoD components (OPNAV – N78, HQMC)

**APML ROLE –**

- Upon Assistant Program Manager for Logistics (APML) establishment and assignment, establish an awareness of the acquisition process and the associated actions required to gain the insight necessary to ensure that product support requirements are achieved. This becomes the APML's primary focus though out the life of the material solution following program initiation.
- **Aware:** MDA has received, reviewed and approved the users MNS/ICD, and signed the Acquisition Decision Memorandum (ADM) establishing the start of Milestone A, the Concept and Technology Development Phase.
- **Aware/Associated Actions:** The needs identified in the MNS/ICD are developed into requirements by the Requirements Generation Process in the form of an ORD/CDD/CPD.
- **Aware/Associated Actions:** The ORD/CDD/CPD translates MNS/ICD requirements into detailed, refined performance capabilities and characteristics of the proposed system.
  - Work with the Warfighter ORD/CDD/CPD team to establish support concept, performance requirements, including reliability, maintainability objectives and alternative support solutions that offer the best solutions at the best value.
- **Aware:** Overall, the MNS/ICD is not an APML's responsibility

**HOW –** See Appendix B Acquisition Documentation, Tab B-5 Mission Need Statement.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
C	-	Product Support Management Planning
G	-	Performance Based Logistics
H	-	Maintenance Planning

### 3.0 OPERATIONAL REQUIREMENTS DOCUMENT (ORD)

<b>OPERATIONAL REQUIREMENTS DOCUMENT</b>	
FOR	
TITLE	
ACAT _____	
Prepared for Milestone Decision	
	Date
 1. General Description of Operational Capability	
2. Threat	
3. Shortcomings of Existing Systems and Command, Control, Communications, Computers, and Intelligence (C4I) SR Architectures	
4. Capabilities Required	
ORD Key Performance Parameters (KPPs)	
a. System Performance	
b. Information Exchange Requirements	
c. Logistics and Readiness	
5. Program Support	
a. Maintenance Planning	
b. Support Equipment	
c. C4I/Standardization, Interoperability, and Commonality	
d. Computer Resources	
e. Human Resources	
f. Human Systems Integration	
g. Other Logistics and Facilities Considerations	
h. Transportation and Basing	
i. Geospatial Information and Services	
j. Natural Environmental Support	
6. Force Structure	
7. Schedule	
8. Program Affordability	
Appendixes	
A. References	
B. Distribution List	
C. List of ORD supporting analysis	
D. Capstone Requirements Document (CRD)	
Glossary	
Part I -- Abbreviations and Acronyms	
Part II -- Terms and Definitions	
Tables	
A -- ORD KPP summary	
B -- Information Exchange Requirements Matrix	

**NOTE:**

IAW the DEPSEDEF Memo dated 30 Oct 2002, and the pending revision to the CJCSI 3170.01B, the ORD will be replaced by the CDD for MS B and the CPD at MS C. Current approved ORDs continue to be valid.

**WHO** – CNO, OPNAV N-78 (ORD Sponsor), Program Executive Officer (PEO), PM, HQMC

**WHAT** - The ORD translates the needs of the MNS into operational requirements for the concept system and/or material solution.

The Requirements Generation System Instruction CJCS Instruction 3170.01B is being rewritten. The ORD and the MNS will be replaced with the following Capabilities Documents when completed.

CDD replaces the ORD at MS B. Each CDD will have a set of validated KPPs that will apply only to that increment of the evolutionary acquisition strategy.

CPD replaces the ORD at MS C.

Common element is Capabilities that may be required to: Resolve a shortfall in warfighting capability, accommodate technology breakthrough or intelligence discoveries.

**WHY** – The Acquisition Strategy identifies approved source documents constituting the authoritative definition of the requirement. Such documents include the ORD, CRD, and Acquisition Program Baseline (APB).

**WHEN** – The ORD is rarely required before program initiation Milestone B. However, a draft ORD could evolve as early as Milestone A, based on the maturity of selected concept technology. The ORD will remain as the user's basic requirements and be updated accordingly throughout the acquisition life cycle to reflect any system change that impacts the established requirements including evolutionary changes planned over the life of the program.

**WHERE** - DoD Components (OPNAV – N78, HQMC), NAVAIR

**APML ROLE –**

- The requirements lead for the system or concept user will request logistics support in developing the ORD within the IPT process.
- In the above figure, paragraphs 4 and 5 provide the basis for the supportability requirements consideration and development.

- Lessons learned and knowledgeable sources should be sought to ensure that requirements established reflect realistic operational user expectations for the performance of the system or concept in support of user need.
- The primary source of supportability requirements evolve from prior like and similar systems and experiences encountered during subsequent phases. The specific system or concept design characteristics will ultimately evolve out of the ensuing supportability analysis effort.

**HOW** – See Appendix B Acquisition Documentation, Tab B-7 ORD.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
E	-	Acquisition Strategy
F	-	Configuration Management
G	-	Performance Based Logistics
H	-	Maintenance Planning
I	-	Technical Data
J	-	Supply Support
K	-	Computer Resource Support
L	-	Facilities
M	-	Support Equipment
N	-	Packaging, Handling, Storage and Transportation
O	-	Manpower/Personnel
P	-	Training and Trainers
Q	-	Design Interface



## 4.0 PROGRAM GOALS

**WHO** – PM, APML

**WHAT** – Establish measurable program goals with thresholds and objectives for the minimum cost, schedule, performance parameters that describe the program over its life cycle.

**WHY** – Every acquisition program required by DoD 5000.2-R, Interim Acquisition Guidebook IAW DEPSECDEF Memo dated 30 Oct 2002. Departments link goals for each program to DoD Strategic plans and other subordinate plans

**WHEN** – Throughout the life cycle

**WHERE** – NAVAIR

### APML ROLE –

- Initiate product support planning and management to ensure established goals are achieved or alternative solution occurs in time to prevent impacts to acquisition and program milestones and events.
- Develop individual plans that provide sufficient detail to measure accomplishment of each required goal. These include but not limited to; ALSP, Supportability Assessment Plan (during SD&D), Site Activation Plan, Initial Operating Capability Supportability Review (IOCSR), Maintenance Plans, Supply Support Management Plan, Contractor Engineering Technical Services (CETS) Plan and, User's Logistics Support Summary's (ULSSs).
- Review progress and track actions.
- Identify risks and corrective action plans for support issues in accordance with program risk management plan.
- Document results and lessons learned.

**Broad product support goals include but are not limited to;**

- **IOC** – Initial Operational Capability – The first attainment of the capability to employ effectively, a weapon, item of equipment, or system of approved specific characteristics that is manned or operated by an adequately trained, equipped and supported military unit or force. The specific definition of IOC for individual weapon system/equipment must be explicitly stated in requirements documents.
- **MSD** – Material Support Date – The date when the Government Supply System assumes responsibility for all spares and repair parts support of a new weapon system, subsystem, engine or support equipment end item at fleet operational sites.
- **NSD** – Navy Support Date – The date when the Navy assumes full integrated logistics support responsibility for a new weapon system, subsystem, engine or support equipment end item at Fleet operational sites.

**HOW –****Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-2	Concept of Operations
-	B-7	Operational Requirements Document
C	-	Product Support Management Planning
-	C-7	Initial Operational Capability Supportability Review (IOCSR)
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-16	Site Activation Plan (SAP)
D	-	Planning, Programming, and Budgeting System
-	D-1	Appropriations
-	D-3	Programming, Budgeting, Fiscal Accounting
-	D-5	Logistics Requirements Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-2	Cost Estimating/Reduce-Total Ownership Cost (R-TOC)
-	E-4	Procurement
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
-	H-12	Supportability Planning and Analysis
-	H-15	User's Logistics Support Summary (ULSS)
J	-	Supply Support
-	J-5	Supply Support Management Plan (SSMP)

## 5.0 THRESHOLDS AND OBJECTIVES

**WHO** – PM, APML, Assistant Program Manager Systems, Engineering (APMSE)

**WHAT** –

- Established program goals (parameters and values) should have thresholds and objectives identified which reflect user values.
- In the case of supportability, needs are identified in the MNS/ICD, translated into operational requirements in the ORD/CDD/CPD, and must be ascertained.
- To ascertain that the requirements are achieved the user establishes an expectation range stated in values for each parameter, thresholds (representing minimum acceptable value for a parameter) and objectives (representing overall desired value for a parameter).
- The program manager tries to obtain the objective value.

**Threshold Value:** For performance, threshold means the minimum acceptable value that is necessary to satisfy the need. For schedule and cost, threshold means the maximum allowable value. If performance threshold values are not achieved, program performance may be seriously degraded and the utility of the system may become questionable. If schedule threshold values are not achieved, the program may be not timely. If cost threshold values are not achieved, the program may be too costly, and the affordability of the system may become questionable.

**Objective Value:** The value desired by the user that the PM tries to obtain. The objective value represents an incremental, operationally meaningful, time-critical, and cost-effective improvement to the threshold value of each program parameter. Program goals (parameters and values) may be refined based on the results of preceding program phases. For each parameter, if no objective is specified, the threshold value also serves as the objective value. As a general rule, if no threshold is specified, the performance objective value also serves as the performance threshold value, the schedule objective value plus 6 months for Acquisition Category (ACAT) I or 3 months for ACAT IA serves as the schedule threshold value, or the cost objective value plus 10 percent serves as the cost threshold value. Despite these guidelines, if no threshold is specified the PM may propose an appropriate threshold value to optimize program trade-space, subject to MDA and user approval. Maximizing PM and contractor flexibility to make cost/performance trade-offs is essential to achieving cost objectives. Trade-offs (within the objective-to-threshold “trade space”) do not require higher-level permission but require coordination with the operational requirements developer. The operational requirements developer limits the number of threshold and objective items in requirements documents and Acquisition Program Baselines (APBs). Performance threshold values represent minimums, with requirements stated in terms of capabilities rather than as technical solutions and specifications. Cost threshold values represent

maximums. Cost objectives are used as a management tool. When a program has time-phased requirements and an evolutionary acquisition strategy each block has a set of parameters with thresholds and objectives specific to the block.

**WHY** – To ensure the system is suitable within the operational spectrum it is intended to be operated and supported in.

**WHEN** – Throughout the life cycle of the program.

**WHERE** – DoD Component (OPNAV N-78, HQMC), NAVAIR, PM

### **APML ROLE –**

- Establish product support planning to achieve the program supportability goals with thresholds and objectives based on user values.
- Ensure supportability requirements are identified in the Prime contract requirement and incentives are established to ensure their achievement.
- Initiate planning aimed at the evaluation of the system to measure the performance in achieving the required established values.
- Document the results of supportability evaluations to identify non-achievement and the proposed solution.
- Track progress
- If system is determined to be operationally suitable and effective in Operation Evaluation (OPEVAL) only minor or minimum additional improvements will be made to the system. Future efforts will be determined as a result of planned evolutionary changes to the system.

**HOW** – See Appendix B Acquisition Documentation, Tab B-7 ORD.

### **Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-13	Product Support Performance Requirements
D	-	Planning, Programming, and Budgeting System
-	D-3	Programming, Budgeting, Fiscal Accounting
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-2	Cost Estimating/Reduced-Total Ownership Cost (R-TOC)

## 6.0 PLANNING

### 6.1 Cost As An Independent Variable (CAIV)

**WHO** – PEO, PM, NAVAIR: PAX: 4.2.5, IPTs

**WHAT** – Process used by the acquisition and requirements communities to develop Reduced-Total Ownership Cost (R-TOC), schedule and performance thresholds and objectives. System Program Managers usually roll up the CAIV Plan, Life Cycle Cost Plan and Affordable Readiness Plans into the R-TOC Plan.

**WHY** – Per CJCS Instruction 3170.01B, the PM shall formulate a CAIV plan to achieve program objectives.

**WHEN** – Upon ORD/CDD/CPD approval.

**WHERE** – NAVAIR, OPNAV N-78, HQMC

#### APML ROLE –

- Develop LRFS and maintain key budget backup information and cost documentation.
- Initiate and maintain communication and interface with the AIR-4.2 cost analyst for support cost analysis data including original Life Cycle Cost data.
- Aware of system cost data visibility and the agencies who provide independent estimates based on program data or independent reviews for comparison including the Cost Estimating Group (CEG) or the Naval Center For Cost Analysis (NCCA).
- Identify or establish a support cost baseline and track change and rationale with cost IPT members anytime cost and requirements are adjusted.

**HOW** – See Appendix B Acquisition Documentation.

#### Appendices/Tabs For Additional Information As Applicable

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
D	-	Planning, Programming, and Budgeting System
-	D-2	Budgeting and Execution
-	D-3	Programming, Budgeting, Fiscal Accounting
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-2	Cost Estimating/Reduce-Total Ownership Cost (R-TOC)
-	E-5	Risk Management

## 6.2 CONCEPT OF OPERATIONS

**WHO** – NAVAIR, PM, APML, IPTs, Fleet Support Team (FST)

**WHAT** – Identification and development of product support considerations during Concept & Technology Development.

**WHY** – Product Support Management Planning is a required part of the Acquisition Strategy.

**WHEN** – Concept Exploration, Component Advanced Development.

**WHERE** – NAVAIR, FST, Fleet

### APML ROLE –

- Provide the PMA the product support planning and strategy for the full acquisition life-cycle to be documented in the program acquisition strategy.
- The planning includes actions to ensure sustainment and to continually improve product affordability for programs in initial procurement, reprocurement, and post-production support.
- Address how the program will accomplish the following objectives:
  - Integrate supply chains to achieve cross-functional efficiencies and provide improved customer service through performance-based arrangements or contracts such as PBL, DVD, PVS and Total System Performance Responsibility (TSPR).
  - Segment support by system or subsystem (such as using Work Centers) and delineate agreements to meet specific customer needs.
  - Maintain relationship with the user and warfighter based on system readiness (include the Fleet in early IPT meetings).
  - Provide standard user interfaces for the customer via integrated sustainment support centers such as FSTs.
  - Select best-value, long-term product support providers and integrators based on competition (Right Sourcing).
  - Measure support performance based on high-level metrics, such as (Right Sourcing) of mission-capable systems, instead of on distinct elements such as parts, maintenance, and data and provide the link to the Product Support functions.

- Improve product affordability, system reliability, maintainability, and supportability via continuous, dedicated investment in technology refreshment through adoption of performance specifications, commercial standards, and Commercial-Off-The-Shelf Non-Developmental Items (COTS/NDI) where feasible, in both the initial acquisition design phase and in all subsequent modification and reprocurement actions. PBL, DVD, PVS and TSPR type contracts can provide the framework necessary to achieve the overall best value support system to the warfighter.

**HOW** – See Appendix B Acquisition Documentation, TAB B-2 Concept of Operations.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-5	Fleet Support Team (FST)
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-12	Product Support Organization
-	C-13	Product Support Performance Requirements
D	-	Planning, Programming, and Budgeting System
-	D-3	Programming, Budgeting, Fiscal Accounting
-	D-5	Logistics Requirements Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
G	-	Performance Based Logistics
-	G-1	Performance Based Logistics (PBL)
H	-	Maintenance Planning
-	H-12	Supportability Planning and Analysis

## 6.3 Acquisition Strategy

**WHO** – PEO, PM, IPTs

**WHAT** – A document describing the PM's strategy to guide program execution from initiation through reprocurement of systems, subsystems, components, spares and services beyond the initial production contract award and during post-production support.

**WHY** – To minimize the time and cost it takes to stay consistent with common sense and sound business practices, satisfy identified validated needs, and to maximize affordability throughout a program's useful life cycle.

**WHEN** – In preparation and prior to program initiation of Milestone B. Updated prior to all major program decision points or whenever the approved acquisition strategy changes or as the system approach and program elements become better defined

**WHERE** – Under Secretary of Defense (USD) (Acquisition, Technology, and Logistics (AT&L)), Assistant Secretary of the Navy (Research, Development, and Acquisition (RDA)), PEO

### APML ROLE –

- Develop and document the intended support strategy for life cycle sustainment and continuous improvement of the product to ensure availability (readiness), supportability and affordability.
- Ensure support considerations are included in the program acquisition strategy.
- Ensure support strategy defines the supportability planning, analyses, and trade-offs conducted to determine the optimum support concept for a material system and strategies for continuous affordability improvement throughout product life cycle.
- Ensure by MS C, the strategy contains sufficient detail to define how the program will address the support and fielding requirements that meet readiness and performance objectives, lower total ownership cost, reduce risks and avoid harm to the environment and human health.
- The primary areas to address include but not limited to;
  - Product support management planning
  - Affordability improvements
  - Source of support
  - Human systems integration
  - Environment, safety, and occupational health



- Post deployment evaluation
- Long term access to data to support competitive sourcing, parts obsolescence, technology insertion, and risk assessments.
- Demonstration of assured supportability and life cycle affordability prior to MS C, Production and Deployment Phase.

## HOW –

### Appendices/Tabs For Additional Information as Applicable

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-5	Commercial off the Shelf/Non-Developmental Item (COTS/NDI)
-	B-7	Operational Requirements Document (ORD)
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-4	Diminishing Manufacturing Sources and Material Shortages Program
-	C-11	Acquisition Logistics Support Plan (ALSP)
D	-	Planning, Programming, and Budgeting System
-	D-3	Programming, Budgeting, Fiscal Accounting
-	D-5	Logistics Requirements Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-2	Cost Estimating/Reduce-Total Ownership Cost (R-TOC)
-	E-5	Risk Management
G	-	Performance Based Logistics
-	G-1	Performance Based Logistics
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
-	H-12	Supportability Planning and Analysis
I	-	Technical Data
-	I-1	Technical Data
J	-	Supply Support
-	J-1	Supply Support
K	-	Computer Resource Support
-	K-1	Computer Resource Support (CRS)
L	-	Facilities
-	L-1	Facilities
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation
-	N-1	Packaging, Handling, Storage, and Transportation (PHS&T)
O	-	Manpower/Personnel
-	O-1	Manpower and Personnel
P	-	Training and Trainers
-	P-1	Training
Q	-	Design Interface
-	Q-1	Design Interface

## 6.4 Cost (ESTIMATING)

**WHO** – PM, APML, NAVAIR: Patuxent River (PAX): 4.2.5

**WHAT** – Logistics (Life Cycle Cost (LCC), O&S, R-TOC) costs

**WHY** – Reduce –Total Owner Cost

**WHEN** – Before Program Initiation (MS A, Component Advanced Development (CAD) Decision Review) and throughout life cycle

**WHERE** – NAVAIR, IPTs, Component Acquisition Executive (CAE)

### APML ROLE –

- Once an APML is assigned, it is imperative to work with the program IPT and cost IPT members to establish a cost baseline for support costs. The early estimates and continuous updates as actual costs evolve become more mature as the program progresses.
- All support requirements costs and funding requirements are documented in the LRFS.
- As the program reaches MS B, the Supportability (S) Analysis data for the system will become the foundation from which actual support requirements costs will be derived.
- The earlier an APML is assigned to an evolving system the greater opportunity they have to field an affordable, supportable, available system.

**HOW** – See Appendix E, Tab E-2 Cost Estimating/Reduce-Total Ownership Cost (R-TOC).

### Appendices/Tabs For Additional Information As Applicable

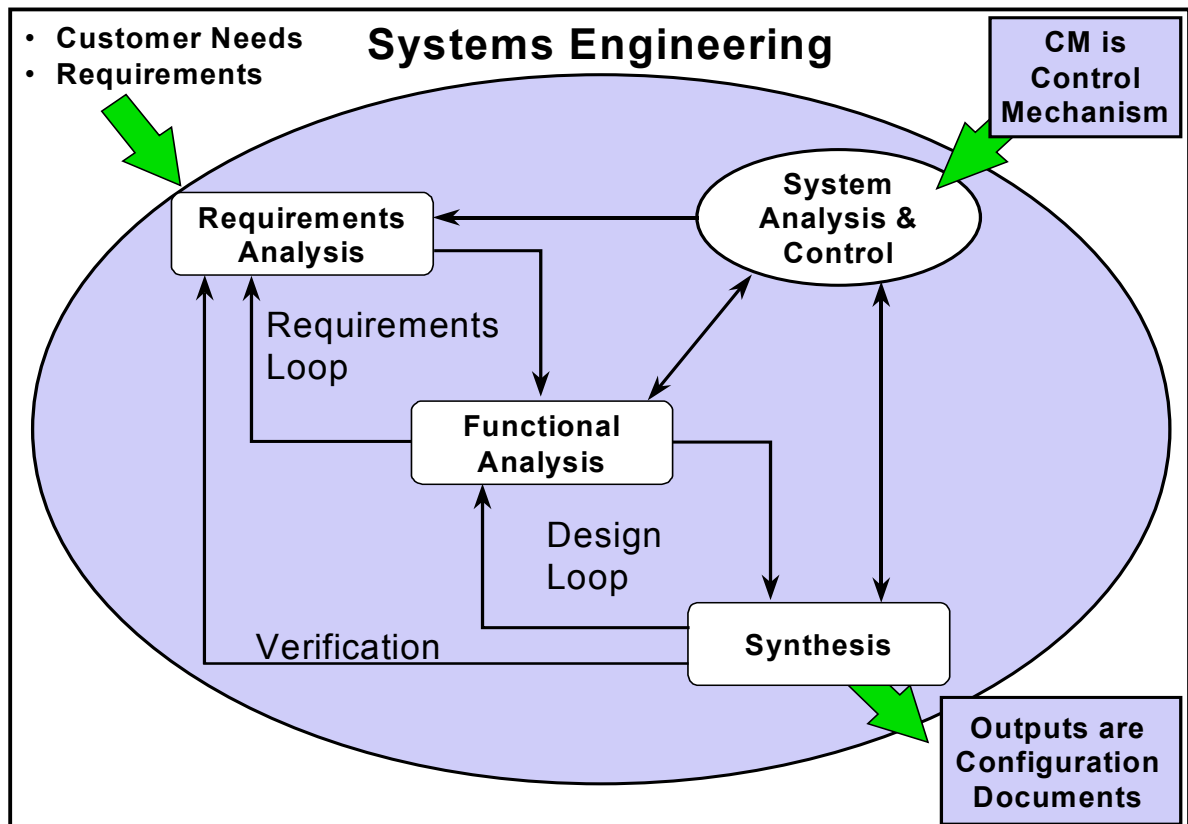
APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
D	-	Planning, Programming, and Budgeting System
-	D-3	Programming, Budgeting, Fiscal Accounting
E	-	Acquisition Strategy
-	E-2	Cost Estimating/Total Ownership Cost
-	E-5	Risk Management
G	-	Performance Based Logistics
-	G-1	Performance Based Logistics (PBL)
H	-	Maintenance Planning
-	H-12	Supportability Planning and Analysis

## 7.0 SYSTEMS ENGINEERING

**WHO** – PM, APML, IPTs, APMSE, Prime Contractor

**WHAT** – An interdisciplinary approach to evolve and verify an integrated and life cycle balanced set of product and processes solutions, which include;

- Product hardware
- Software
- Planned logistics resources



**WHY** – To translate operational users’ needs into requirements and requirements into designs which meet program performance, cost, and schedule requirements for the eight primary life cycle functions of the systems engineering process including;

- **Support:** the activities necessary to provide operations support, maintenance, logistics, and material management
- Disposal
- Training
- Verification
- Manufacturing/Production/Construction
- Deployment
- Development
- Operation

**WHEN** – Iteratively throughout the life cycle

**WHERE** – NAVAIR, IPTs, Prime Contractor

**APML ROLE –**

- Leader of the supportability team.
- Responsible for generating supportability requirements for the systems engineering process once the user’s needs are established.
- Ensure supportability requirements are defined adequately, accurately and timely to ensure their integration into the total system approach.
- If required, ensure a supportability analysis is conducted to establish the foundation for the life cycle support requirements of the intended system and those of the user.

**HOW –**

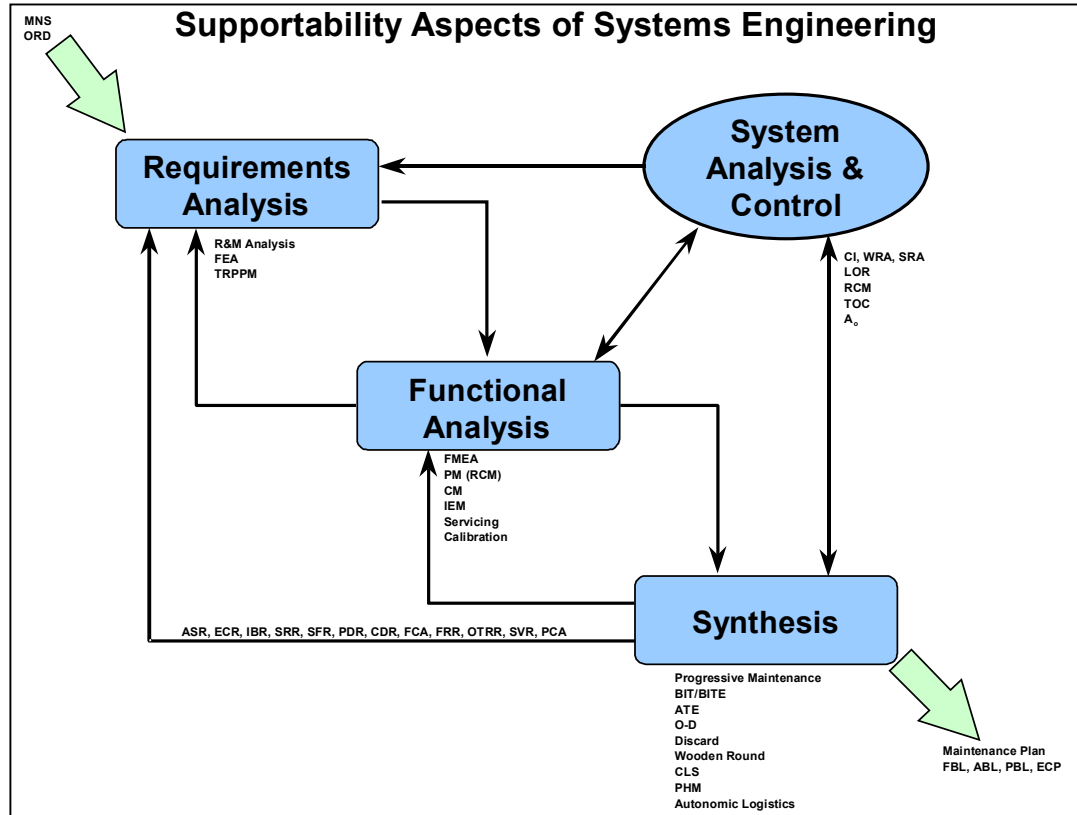
**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-5	Mission Need Statement (MNS)
-	B-7	Operational Requirements Document (ORD)
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirements Funding Summary (LRFS)
H	-	Maintenance Planning
-	H-12	Supportability Planning and Analysis
Q	-	Design Interface
-	Q-1	Design Interface

## 7.1 Supportability (S) Analysis

**WHO** – APML, APMSE, NAVAIR: PAX: 3.1/3.2, FST, Prime Contractor

**WHAT** – The analytical process that generates the support requirements to satisfy the support life cycle functional element in the Systems Engineering process.



**WHY** – To ensure;

- supportability is included as a system performance requirement.
- the system is concurrently developed.
- the system is acquired with the optimal support system and infrastructure.

**WHEN** – Iteratively, throughout the life cycle

**WHERE** – NAVAIR, IPT, FST, Resident Integrated Logistics Support Detachment (RILSD), Prime contractor

**APML ROLE –**

- Identify requirements and candidates for supportability analyses.
- Determine required Supportability Analysis Data Requirements (Logistics Management Information (LMI) Performance specification, MIL-PRF-49506 preferred) with appropriate IPT based on analyses performed.
- Initiate planning requirements (management resources and contract).
- Conduct analyses required.
- Use the results of the analyses as the foundation of the life cycle support concept iteratively.

**HOW –** See Appendix H Maintenance Planning, Tab H-12 S Planning and Analysis.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-7	Operational Requirements Document (ORD)
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirements Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
H	-	Maintenance Planning
-	H-8	Maintenance Plan
I	-	Technical Data
-	I-1	Technical Data
J	-	Supply Support
-	J-1	Supply Support
K	-	Computer Resource Support
-	K-1	Computer Resource Support (CRS)
L	-	Facilities
-	L-1	Facilities
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation
-	N-1	Packaging, Handling, Storage, and Transportation (PHS&T)
O	-	Manpower/Personnel
-	O-1	Manpower/Personnel
P	-	Training and Trainers
-	P-1	Training
Q	-	Design Interface
-	Q-1	Design Interface

## 7.2 Developing Product Support Performance Requirements

**WHO** – PM, APML, APMSE, IPTs

**WHAT** – Supportability requirements expressed in performance terms.

- For example, requirements that should be stated in performance terms include but are not limited to maintainability, availability, compatibility, transportability, interoperability, etc.
- Requirement: Any condition, characteristic, or capability that must be achieved and is essential to the end item's ability to perform its mission in the environment in which it must operate. Requirements must be verifiable.

### EXAMPLE:

*Logistics and readiness performance requirements stated in an Operational Requirements Document:*

(1) Reliability.

- (a) Mission. Mean Flight Hours Between Abort (MFHBA) shall be the primary measure of mission reliability. XXX aircraft shall have an MFHBA of 17 hours; XXX aircraft shall have an MFHBA of 15 hours (Threshold).
- (b) Logistics. Mean Flight Hours Between Failure Logistics (MFHBF<sub>log</sub>) shall be the primary measure of logistical reliability. Both variants shall have an MFHBF<sub>log</sub> of 0.9 hours (Threshold), 1.2 hours at system maturity (60,000 hours) (Objective).

(2) Availability.

- (a) Mission Capable (MC) Rates. A MC rate greater than or equal to 82 percent is required (Threshold)/greater than or equal to 87 percent is desired (Objective).

(3) Maintainability.

- (a) Maintenance Man-hours Per Flight Hour Organizational (MMH/FH<sub>Org</sub>). A 20 hours or less MMH/FH<sub>Org</sub> is required (Threshold) an 11 hour or less MMH/FH<sub>Org</sub> ratio is desired (Objective).
- (b) Mean Repair Time (Abort)(MRT<sub>A</sub>). An MRT<sub>A</sub> of 4.8 hours (Threshold) is required.
- (c) Built in Test (BIT). Specific Built-In-Test (BIT) requirements are listed in Tables 1 and 2 below.

Parameters	Thresholds	Objectives
Fault Detection (FD)	70%	85%
Fault Isolation (FI)	70%	85%
MFHBFA	1.4 hours	3.0 hours

Table 1.

Parameters	Thresholds/USSOCOM/P <sup>3</sup> I	Objectives/USSOCOM/P <sup>3</sup> I
FD	85%	90%
FI	85%	90%

Table 2.

- (4) Mobilization and Surge Requirements. The XXX aircraft must arrive at a staging base within 72 hours of initial mobilization notification and launching within 12 hours of arrival at the staging base (Threshold).
- (5) Combat Support Requirements.
- (a) XXX aircraft design must provide ease of access for inspection and facilitate the rapid repair/replacement of aircraft components in the field.
  - (b) A rapid repair of minor battle damage capability by Organizational Maintenance Activity personnel in the field is required. Battle damage assessment and repair procedures will be incorporated into the IETMs (Threshold).
  - (c) Rapid mission turn-around (refuel only) is required to be completed by no more than two qualified personnel in 15 minutes or less (Threshold)/10 minutes or less (Objective).



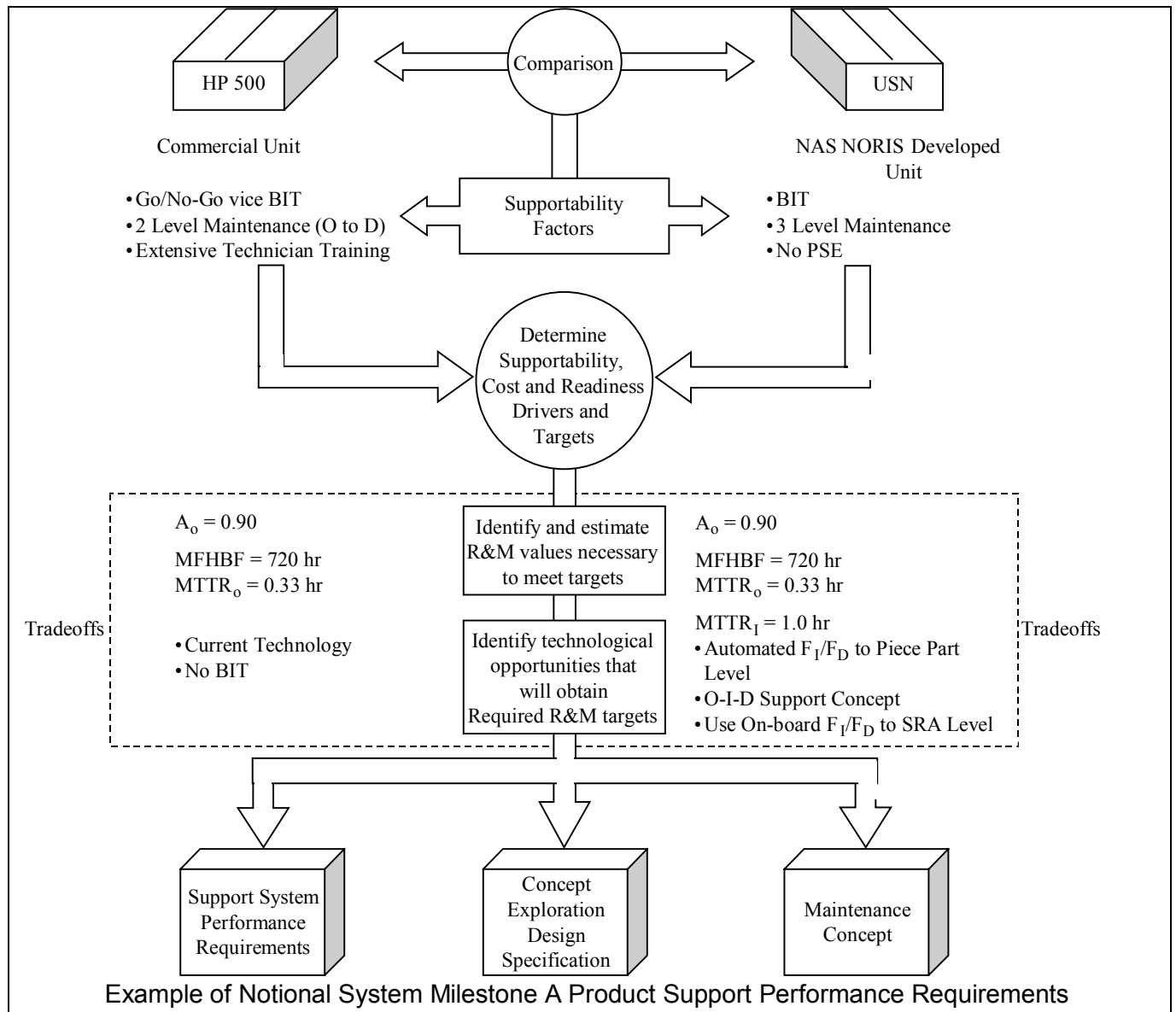
**Example: Operational Suitability:**

Characteristic	Parameter	USMC Threshold	USMC Objective	USSOCOM Threshold	USSOCOM Objective
Reliability	***MTBF (Note 1)	$\geq 1.4$ hrs	$\geq 2.0$ hrs	N/A	N/A
	Weapon System Reliability (Note 2)	N/A	N/A	$\geq 77\%^*$	$\geq 84\%$
	***Mission Reliability (Note 3)	$\geq 85\%$	N/A	N/A	N/A
	MFHBA (Note 4)	$\geq 17.0$ hrs	N/A	N/A	N/A
Maintainability	***MTAT (Note 5)	$\leq 15$ min	$\leq 10$ min	$\leq 15$ min	$\leq 10$ min
	***MRT <sub>OMF</sub> (Note 6)	N/A	N/A	$\leq 7.0$ hrs	$\leq 5.0$ hrs
	***MMH/FH <sub>ORG</sub> /MR (Note 7)	N/A	$\leq 11.0$ hrs	N/A	$\leq 11.0$ hrs
	MRT <sub>A</sub> (Note 8)	$\leq 4.8$ hrs	N/A	N/A	N/A
	MCMT (Note 9)	$\leq 3.7$ hrs	N/A	N/A	N/A
	MFHBUM (Note 10)	$\geq 0.7$ hrs	N/A	N/A	N/A
Availability	***MC/A <sub>O</sub> (Note 11)	$\geq 82\%$	$\geq 87\%$	$\geq 82\%$	$\geq 87\%$
	FMC (Note 12)	$\geq 75\%$	N/A	N/A	N/A
Diagnostics	***FD/P <sub>CD</sub> (Note 13)	$\geq 70\%$	$\geq 85\%$	$\geq 70\%$	$\geq 85\%$
	***FI/P <sub>CFI</sub> (Note 14)	$\geq 70\%$	$\geq 85\%$	$\geq 70\%$	$\geq 85\%$
	***FA (Note 15)	$\leq 25\%$	$\leq 15\%$	$\leq 25\%$	$\leq 15\%$

\* JROC validated key performance parameters

\*\* Specific mission profiles may be found in the ORD

\*\*\* Denotes a XXX aircraft ORD derived parameter and threshold/objective value.



**WHY** – DoD policy mandates the use of performance requirements as the preferred method of preparing specifications. The specifications are imposed on the system developer and verified to ensure the system meets the intended needs of the user.

**WHEN** – Expressed as needs in the MNS and translated into requirements in the ORD at Milestone A. Iteratively reviewed and updated throughout the life cycle.

**WHERE** - USD (AT&L), ASN (RDA), PEO, PM, IPTs, Prime contractor

**APML ROLE –**

- Develop measurable Product Support performance requirements expressed in desired outcomes. (not the means or method which should be left to the contractor)
- Maintain continuous interface within the IPT structure to ensure supportability considerations are considered that will significantly lower O&S costs.
- Ensure product support specifications include adequate assessment of established requirements.
- Identify areas of risk within the IPT for identification and resolution.

**HOW –** See Appendix C Product Support Management Planning, Tab C-13 Product Support Performance Requirements.

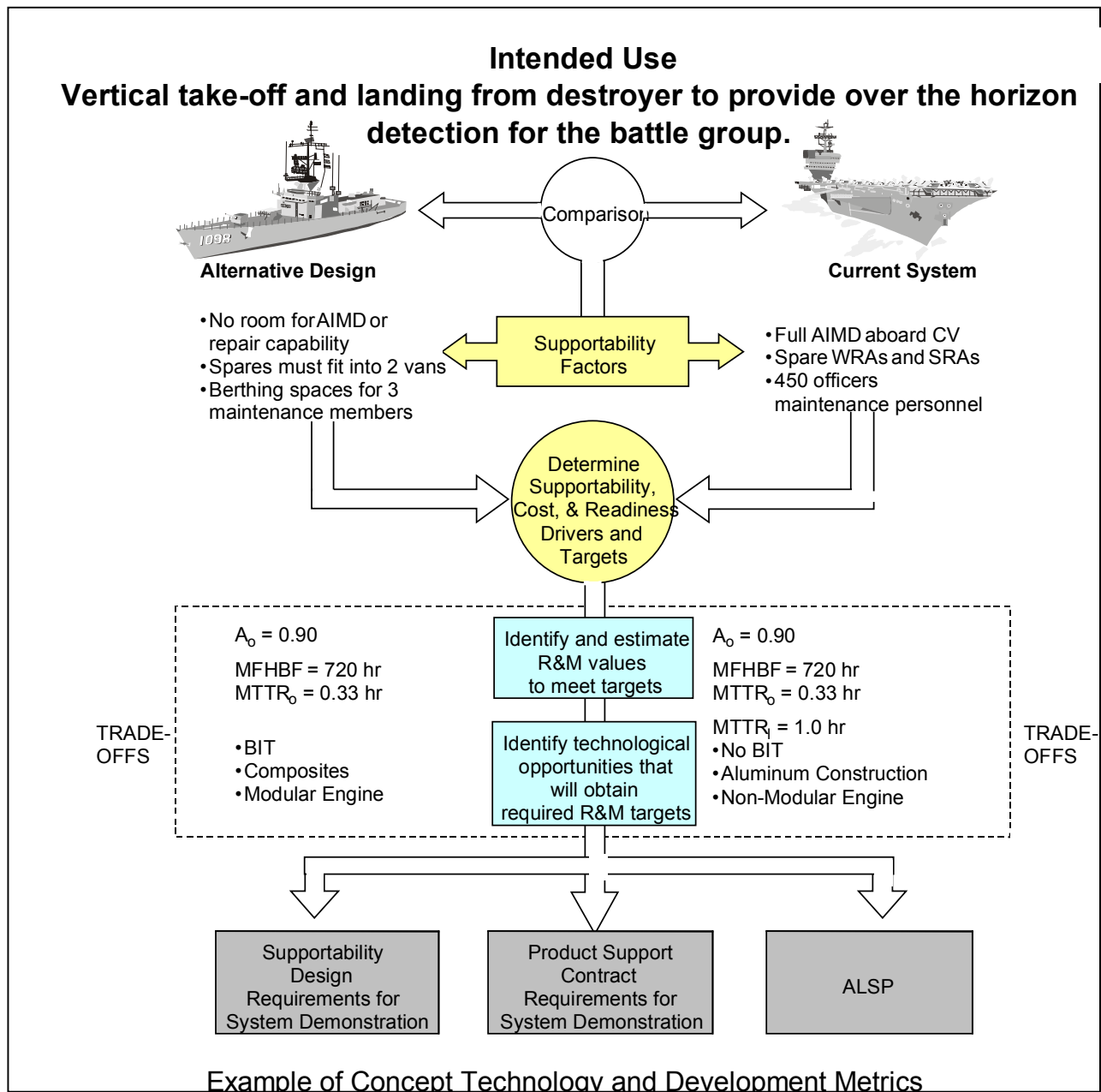
**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B		Acquisition Documentation
	B-4	Metrics
	B-5	Mission Need Statement (MNS)
	B-7	Operational Requirements Document (ORD)
C		Product Support Management Planning
	C-1	Affordable Readiness
	C-10	Product Support Evaluation
D		Planning, Programming, and Budgeting System
	D-3	Programming, Budgeting, Fiscal Accounting
E		Acquisition Strategy
	E-2	Cost Estimating/Reduced-Total Ownership Cost (R-TOC)
	E-5	Risk Management
J		Supply Support
	J-1	Supply Support

## 7.3 Metrics

**WHO** – OPNAV N-78, PM, APML, APMSE

**WHAT** – Measures of how well we are performing in meeting the user's needs and expectations. Example provided in figure below.



**WHY** – Metrics facilitate and sustain the “right” improvements necessary to adjust our tasks, activities, systems or processes in meeting the organization, program and user’s needs and expectations.

**WHEN** – Throughout life cycle

**WHERE** - USD (AT&L), ASN (RDA), NAVAIR, PEO, PM, IPTs, Prime contractor

**APML ROLE –**

- Analyze requirements within the IPT process to determine the benefit or need for establishing metrics to determine if operational requirements and customer expectations are being achieved.
- Identify appropriate product support items for which metrics should be established.
- When metric results provide indication for action to improve processes, products and or activities to meet an intended need, initiate appropriate action.
- Continue, when opportunities exist for continuous improvement.

**HOW** – See Appendix B Acquisition Documentation, Tab B-4 Metrics.

**Appendices/Tabs For Additional Information As Applicable.**

APPX	TAB	TITLE
B		Acquisition Documentation
	B-2	Concept Of Operations
C		Product Support Management Planning
	C-1	Affordable Readiness
	C-10	Product Support Evaluation
	C-13	Product Support Performance Requirements
	C-19	Status Monitoring
D		Planning, Programming, and Budgeting System
	D-3	Programming, Budgeting, Fiscal Accounting
	D-4	Program Related Logistics (PRL)
E		Acquisition Strategy
	E-2	Cost Estimating/Reduced-Total Ownership Cost (R-TOC)

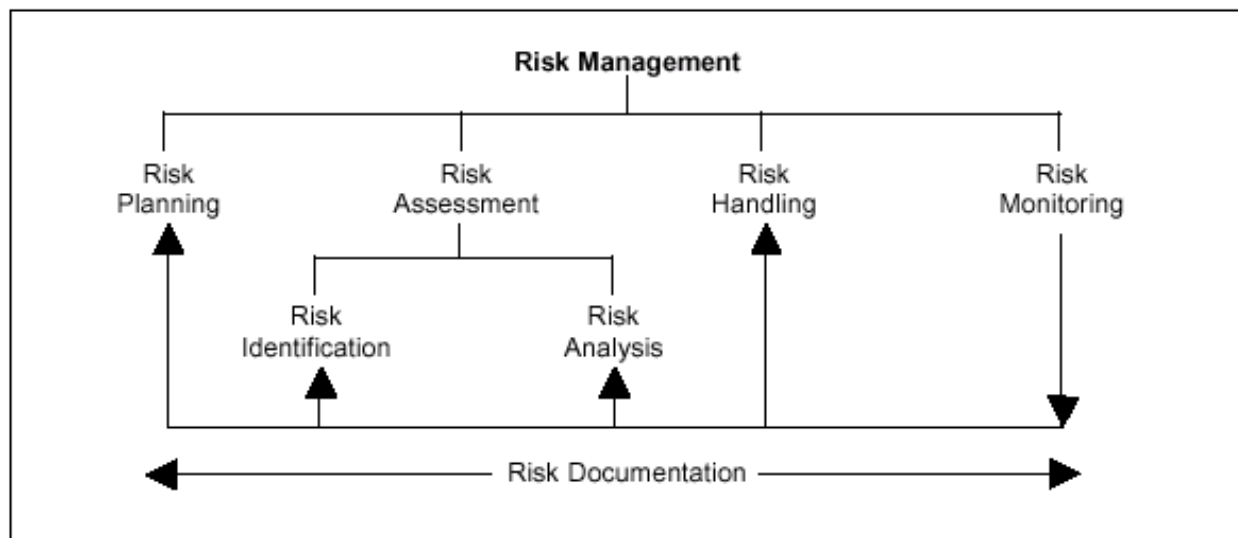
## 8.0 RISK MANAGEMENT

**WHO** – NAVAIR, PM, APML, APMSE, PCO, IPT, Prime Contractor

**WHAT** – A measure of the potential inability to achieve overall program objectives within defined cost, schedule, and technical constraints and has two components:

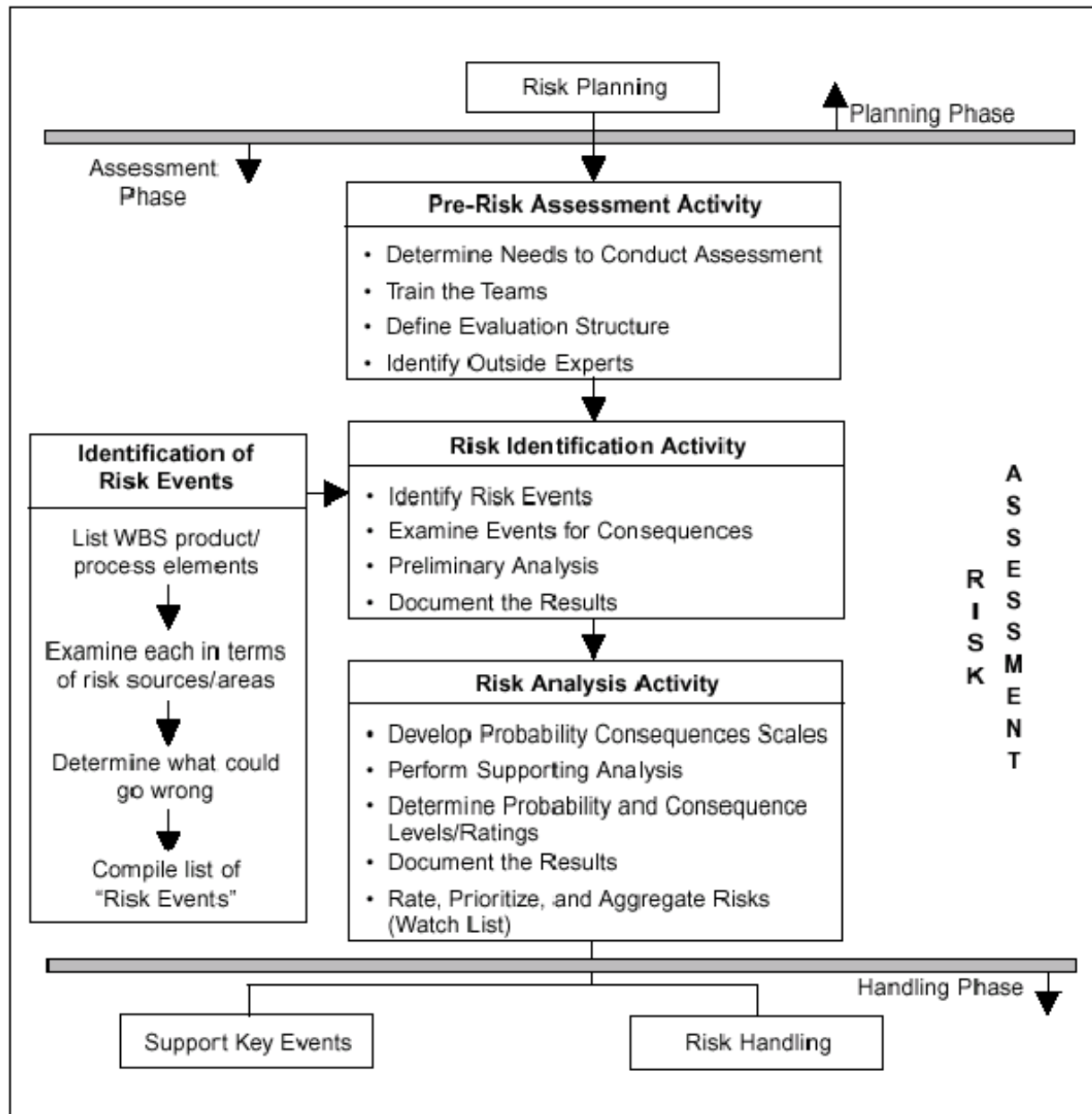
- (1) the *probability/likelihood* of failing to achieve a particular outcome
- (2) the *consequences/impacts* of failing to achieve that outcome.

**Risk management:** is the act or practice of dealing with risk. It includes planning for risk, assessing (identifying and analyzing) risk areas, developing risk-handling options, monitoring risks to determine how risks have changed, and documenting the overall risk management program.



**Risk assessment:** is the process of identifying and analyzing program areas and critical technical process risks to increase the probability/likelihood of meeting cost, schedule, and performance objectives.

- *Risk identification* is the process of examining the program areas and each critical technical process to identify and document the associated risk.
- *Risk analysis* is the process of examining each identified risk area or process to refine the description of the risk, isolating the cause, and determining the effects. It includes risk rating and prioritization in which risk events are defined in terms of their probability of occurrence, severity of consequence/impact, and relationship to other risk areas or processes.



**Risk events:** Things that could go wrong for a program or system, are elements of an acquisition program that should be assessed to determine the level of risk. The events should be defined to a level that an individual can comprehend the potential impact and its causes. For example, a potential risk event for a turbine engine could be turbine blade vibration. There could be a series of potential risk events that should be selected, examined, and assessed by subject-matter experts.

The relationship between the two components of risk -- probability and consequence/impact -- is complex. To avoid obscuring the results of an assessment, the risk associated with an event should be characterized in terms of its two components. As part of the assessment there is also a need for backup documentation containing the supporting data and assessment rationale.

**Risk planning:** is the process of developing and documenting an organized, comprehensive, and interactive strategy and methods for identifying and tracking risk areas, developing risk-handling plans, performing continuous risk assessments to determine how risks have changed, and assigning adequate resources.

**Risk handling:** is the process that identifies, evaluates, selects, and implements options in order to set risk at acceptable levels given program constraints and objectives. This includes the specifics on what should be done, when it should be accomplished, who is responsible, and associated cost and schedule. The most appropriate strategy is selected from these handling options. For purposes of the *Guide*, risk handling is an all-encompassing term whereas risk mitigation is one subset of risk handling.

**Risk monitoring:** is the process that systematically tracks and evaluates the performance of risk-handling actions against established metrics throughout the acquisition process and develops further risk-handling options, as appropriate. It feeds information back into the other risk management activities of planning, assessment, and handling.

**Risk documentation:** is recording, maintaining, and reporting assessments, handling analysis and plans, and monitoring results. It includes all plans, reports for the PM and decision authorities, and reporting forms that may be internal to the Program Management Office (PMO).

**WHY** – Required by Department of Defense Directive (DoDD) 5000.1. Risk mitigation helps to reduce system-level risk to acceptable levels by the interim progress review preceding system demonstration and by Milestone C.

**WHEN** – Risk management is Initially formalized during a program's Concept Exploration Phase and updated for each subsequent program phase.



**WHERE** - USD (AT&L), ASN (RDA), NAVAIR, PEO, PM, IPTs

**APML ROLE –**

- Establish risk management requirements and critical risk areas.
- Identify IPT member or supportability POC for risk management board participation.
- Aggressively pursue risk item elimination or risk reduction solution.
- Develop risk reporting mechanism for supportability risks (i.e. Logistics Risk Cube).

**HOW** – See Appendix E Acquisition Strategy, Tab E-5 Risk Management.

**Appendices/Tabs For Additional Information As Applicable.**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C		Product Support Management Planning
	C-11	Acquisition Logistics Support Plan (ALSP)
	C-19	Status Monitoring
E		Acquisition Strategy
	E-1	Acquisition Strategy

# APML HANDBOOK



## SECTION II

### *System Development & Demonstration*

## **SECTION II**

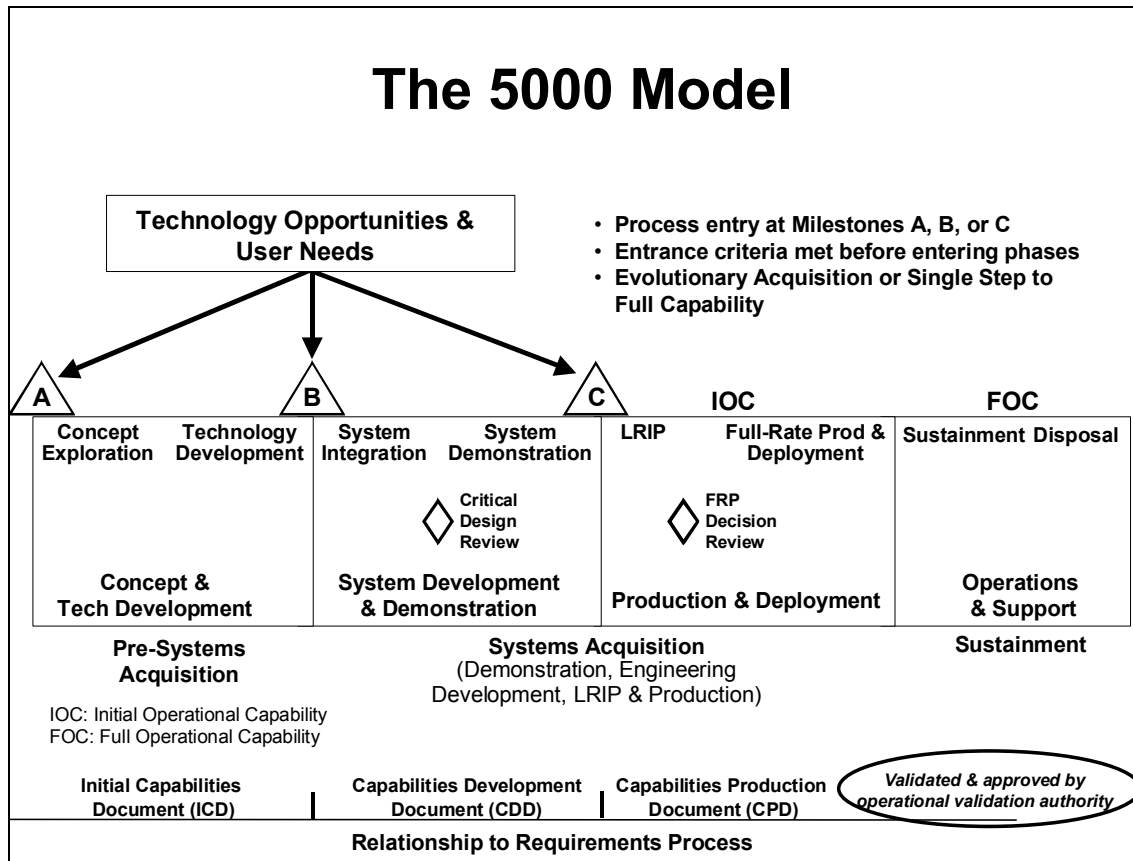
# **SYSTEM DEVELOPMENT AND DEMONSTRATION**

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4.0 Planning, Programming and Budgeting	8
5.0 Procurement	10
6.0 Product Support Evaluation	12
7.0 Status Monitoring	14

## INTRODUCTION



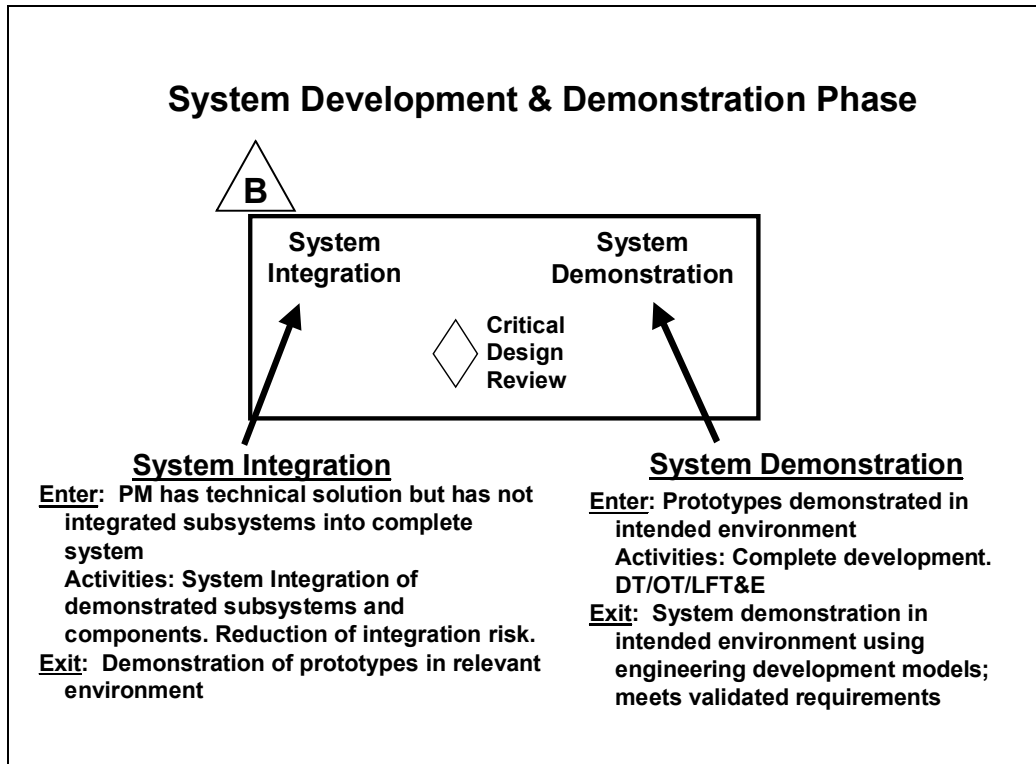
## SYSTEM ACQUISITION PROCESS

The MDA may authorize entry into the acquisition process at any point consistent with phase-specific entrance criteria.

### Entrance Criteria:

- Have an integrated architecture for the relevant mission area?
- Answers to the following questions is “yes”
  - Does the acquisition support core/priority mission functions of the Federal Government?
  - Does the acquisition need to be undertaken by DoD because no alternative private sector or government source can better support the function?
  - Does the acquisition support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial off-the-shelf technology?
- Technology mature?
- Have APB and minimum set of KPPs?
- Affordability determination?
- Full funding in Future Years Defense Plan (FYDP)?

## MILESTONE B



### Entrance Criteria:

- Technology maturity (determines path to be followed)
- Validated requirements
- Funding (full funding in the FYDP)

### **NOTE:**

Entering System Development & Demonstration (The MDA determines the appropriate entry point) based on above:

- Directly out of Technology Opportunities & User Needs
- From the Concept & Technology Development Phase

Programs entering the process at Milestone B have an integrated architecture for their relevant mission area.

### **Milestone Decision Authority (MDA):**

- At Milestone B, the **MDA approves:**
  - Approves the entry to System Development and Demonstration Phase
  - Program Initiation
  - Acquisition Strategy
  - Acquisition Program Baseline
  - Low-Rate Initial Production (LRIP) quantities (where applicable)
  - Exit criteria for next phase

**NOTE:**

Remember, the Acquisition Strategy is key as it defines the program structure used to achieve full capability and the approach to be followed in System Development & Demonstration.

**Purpose of Milestone B:**

- To develop a system
- Reduce integration and manufacturing risk
- Ensure operational supportability
- Ensure design for productability
- Assure affordability
- Demonstrate system integration, interoperability, and utility

**Primary Activities:** ( see SD&D illustration above)

**APML CONSIDERATIONS:*****Where Has APML Focus Been: “Milestone A”***

- Implementing acquisition strategy
- Refining initial support planning and life cycle costs estimates
- Keeping up with the emerging design
- IPT interface
- Pursuing risk reduction opportunities
- Preparing logistics specification for SD&D contract package
- Considering supportability analyses
- Initiating Post Production Support Planning

***Current APML Focus: “Milestone B”***

- Through the IPT process, refine supportability planning and requirements
  - Get buy in from the support team and the user
  - Support plan must be flexible but nothing short of an **“OPERATIONALLY SUITABLE”** system for Initial Operational Test and Evaluation (IOT&E) in this phase is acceptable
  - Implement support plans supportability
- Initiate planning requirements to ensure all Test and Evaluation (T&E) tasks are successfully conducted;
  - Implement supportability assessment planning
  - Document support risks
  - Initiate corrective action plans
  - **Get user buy-in**
- Continue contract requirements and deliverable management within the IPT
- Initiate initial strategy for Milestone C contract requirements

- Update supportability planning documentation including Post Production Support Planning
- To execute these requirements the APML must provide:
  - Organization
  - Planning and Scheduling
  - Planning, Programming, and Budgeting
  - Procurement
  - Evaluation
  - Status Monitoring

## APML ROLES AND RESPONSIBILITIES

### SYSTEM DEVELOPMENT AND DEMONSTRATION

<p>Logistics implication of each major system alternative identified and assessed</p> <p>Influence selection of major system alternative</p> <p>All prototyping and ADM testing are planned for</p> <p>The baseline support concept established</p> <p>Objectives and thresholds established, compare with contemporary baseline system for:</p> <ul style="list-style-type: none"> <li>• Readiness</li> <li>• Reliability</li> <li>• Maintainability (including diagnostics)</li> <li>• Other Product Support parameters</li> </ul> <p>Technical and operational thresholds established (to be verified by Development Test and Evaluation (DT&amp;E) and OPEVAL) for:</p> <ul style="list-style-type: none"> <li>• Reliability</li> <li>• Maintainability</li> <li>• Inherent availability</li> <li>• Operational availability</li> </ul> <p>Logistics risk areas are identified by analyzing sensitivity of manpower and other resources and associated impact on system readiness and Supportability (S) to changes in key parameters including:</p> <ul style="list-style-type: none"> <li>• Reliability</li> <li>• Maintainability</li> <li>• Utilization rate</li> </ul> <p>Consistency of manpower estimates in ALSP and Manpower Estimate ensured.</p> <p>Trade-offs conducted to determine best balance between:</p> <ul style="list-style-type: none"> <li>• H/W characteristics</li> <li>• S/W characteristics</li> <li>• Product Support Concepts</li> <li>• Product Support resource requirements</li> </ul> <p>Changes to requirements for Product Support (such as unique skills or specialties) that are new or In short supply based upon above trade-offs identified</p>	<p><b>ILS Management:</b></p> <p>Conduct logistics team strategy and planning meeting</p> <p>Determine Product Support appraisal requirements</p> <p>Determine contractual Product Support requirements</p> <p>Update ALSP for next phase</p> <p>Update Acquisition Strategy</p> <p>Update Product Support inputs to TEMP</p> <p>Establish a CM interface</p> <p>Update (LRFS)</p> <p>Determine Product Support Appraisal requirements</p> <p>Determine Product Support contractual requirements</p> <p>Continue CM interface program</p> <p>Conduct S IPT meetings</p> <p><b>Maintenance Planning:</b></p> <p>Ensure Supportability analysis management</p> <p>Refine Maintenance Concept</p> <p>Refine maintenance requirements thru analyses for:</p> <ul style="list-style-type: none"> <li>• O-level</li> <li>• I-level</li> <li>• D-level</li> </ul> <p>Identify Maintenance Assist Module (MAM) requirements</p> <p>Develop a Depot repair plan</p> <p>Perform Level of Repair (LOR) Analysis</p> <p>Initiate Reliability Centered Maintenance (RCM) analysis</p> <p>Initiate Planned Maintenance System (PMS) development</p> <p>Prepare preliminary Maintenance Plan</p> <p>Publish Maintenance Plan</p> <p>Identify Fleet support requirements</p> <p>Assign Source Maintenance &amp; Recoverability (SM&amp;R) codes</p> <p>Publish Maintenance Plan</p> <p>Identify Fleet support requirements</p> <p>Assign SM&amp;R codes</p>
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## APML ROLES AND RESPONSIBILITIES (cont.)

<b>SYSTEM DEVELOPMENT AND DEMONSTRATION</b>	
<p>Reflect North Atlantic Treaty Organization (NATO) standardization and interoperability requirements in Product Support planning (where appropriate)</p> <p>Product Support considerations and give them appropriate weight in RFPs, source selection evaluation factors, and contract provisions clearly defined</p> <p>T&amp;E plans are adequate to develop data base to quantitatively assess achievement of:</p> <ul style="list-style-type: none"> <li>• Product Support related thresholds</li> <li>• Adequacy of ALSP and resources impact on cost and readiness objectives</li> </ul> <p>Preliminary list of candidates for contractor support during initial deployment developed</p> <p>Facility designs for contract award in year that facilities will be authorized and funded are initiated, completed and ready</p> <p>Clearly defined Systems Engineering procedures (e.g. Reliability Centered Maintenance approach) implemented to:</p> <ul style="list-style-type: none"> <li>• Influence the evolving system design</li> <li>• Define automated diagnostics requirements</li> </ul> <p>Product Support functional requirements determined</p> <p>Adequacy of the Maintenance Plan confirmed</p> <p>Spares Investment levels are realistic based on readiness objectives, system utilization rates, and demand</p> <p>Manpower requirements can be met from DoD projections</p> <p>Plans are in place for follow-on readiness assessments after system delivery</p> <p>Adequate planning in place for software maintenance and support of embedded computer systems after system delivery</p> <p>Plans In place for cost effective continued System Engineering and Product Support engineering support to maintain readiness objectives following delivery</p>	<p><b>Supply Support:</b></p> <p>Determine Supply Support strategy</p> <p>Develop Supply Support Concept</p> <p>Confirm Supply Support contractual requirements</p> <p>Ensure Logistics Element Manager (LEM) data requirements delivered</p> <p>Develop Supply Support Management Plan (SSMP)</p> <p>Re-evaluate Supply Support Concept</p> <p>Determine Supply Support contractual requirements</p> <p>Update Supply Support Management Plan</p> <p>Exercise Provisioned Item Order options</p> <p>Evaluate contractor's performance</p> <p>Evaluate system performance</p> <p>Develop Interim Supply Transition Plan</p> <p>Review program documentation</p> <p>Negotiate and formalize Material Support Date (MSD)</p> <p>Formally assign Program Support Inventory Control Point (PSICP)</p> <p>Validate MAM requirements</p> <p><b>Manpower Personnel &amp; Training:</b></p> <p>Update manpower &amp; training requirements using TRPPM</p> <p>Determine contractual personnel &amp; training requirements</p> <p>Prepare inputs to</p> <ul style="list-style-type: none"> <li>• Preliminary Ship Manning Document (PSMD)</li> <li>• Preliminary Squadron Manning Document (PSQMD)</li> </ul> <p>Develop EFR plan (Phase I)</p> <p>Develop Navy Training System Plan (NTSP)</p> <p>Determine personnel and training contractual requirements</p> <p>Update NTSP</p> <p>Develop curriculum materials to support</p> <ul style="list-style-type: none"> <li>• Technical Evaluation (TECHEVAL)</li> <li>• OPEVAL</li> <li>• Follow-On Test and Evaluation (FOT&amp;E)</li> </ul>

## APML ROLES AND RESPONSIBILITIES (cont.)

### SYSTEM DEVELOPMENT AND DEMONSTRATION

<p>Provision for smooth transition from contractor to organic support</p> <p>Contract requirements consistent with ALSP and objectives</p> <p>Strategic mobility requirements have been met</p> <p>Independent user and training activity reviews have confirmed adequacy of training plans</p> <p>Training equipment Installations will meet deployment schedules</p> <p>Plans, resources and lead times adequate for:</p> <ul style="list-style-type: none"> <li>• Validation and delivery of Product Support functions to meet deployment need</li> <li>• Operational review.</li> <li>• Evaluation. analysis of support capability, O&amp;S costs, and manpower in relation to readiness objectives</li> <li>• Correction of Supportability (<u>S</u>) deficiencies by changes to design, production, &amp; planning</li> <li>• Adjustments to support resources based on field Reliability &amp; Maintainability (R&amp;M) and readiness experience</li> <li>• Identification of projected obsolescence dates, planned modifications, and life extension programs</li> </ul> <p>Evaluation of alternative post-production support concepts including buy-out, sustained production, competitive industrial base maintenance, and organic vs. contractor support</p>	<p>Update inputs to PSMD</p> <p>Update inputs to PSQMD</p> <p><b>Facilities:</b></p> <p>Update facilities requirements</p> <p>Update MILCON funding requirements</p> <p>Update Working Capital Fund (WCF), Operation &amp; Maintenance, Navy (O&amp;M,N) and other funding requirements</p> <p>Develop EFR's Plan (Phase II)</p> <p>Acquire facilities</p> <p><b>Support Equipment:</b></p> <p>Continue to evaluate SE requirements (Evaluate MIL-STD 2165)</p> <p>Testability Program for Electronics Systems and Equipment applicability</p> <p>Evaluate impact of proposed design on calibration requirements</p> <p>Update Support Equipment planning</p> <p>Determine Support Equipment contractual requirements</p> <p>Evaluate impact of design on calibration requirements</p> <p>Add Support Equipment to allowance and requirements lists</p> <p>Initiate Support Equipment procurements</p> <p><b>PHS&amp;T:</b></p> <p>Refine PHS&amp;T Program Plan</p> <p>Continue PHS&amp;T candidate identification</p> <p>Refine logistics flowchart</p> <p>Continue to identify &amp; refine PHS&amp;T requirements</p> <p>Determine contractual PHS&amp;T requirements</p> <p>Develop Allocated Baseline for special containers, handling or transportation of equipment</p>
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## APML ROLES AND RESPONSIBILITIES (cont.)

### SYSTEM DEVELOPMENT AND DEMONSTRATION

<p>Adequate programmed support resources to meet objectives for peacetime readiness and wartime employment through:</p> <ul style="list-style-type: none"> <li>• Analysis</li> <li>• T&amp;E results</li> <li>• Independent reviews</li> </ul> <p>Parameters used In determining support resource requirements are traceable to program objectives and thresholds ensured</p> <p>Support acquisition funding profiles are traceable to those presented at The CAD Interim Progress Review (IPR) are ensured</p> <p>The impact of any changes assessed on</p> <ul style="list-style-type: none"> <li>• Readiness objectives</li> <li>• Support capability objectives</li> </ul> <p>Preliminary manpower document and supporting analysis developed</p> <p>Plans and assignment of responsibilities for follow-on readiness assessments beginning with system deployment developed</p> <p>Software and related computer support plans (CRL-CMP) developed for maintaining and maturing software and related support of embedded computer systems after system is fielded reflecting:</p> <ul style="list-style-type: none"> <li>• Procedures</li> <li>• Requirements</li> <li>• Milestones</li> <li>• Responsibilities</li> </ul> <p>Plans for cost-effective post-production support, including continued strategy for reviews developed to ensure that readiness objectives are met including:</p> <ul style="list-style-type: none"> <li>• Systems Engineering</li> <li>• Product Support Engineering Management</li> </ul> <p>Depot source of repair decision or develop a time phased action plan for same made</p>	<p>Update PHS&amp;T Program Plan and Logistics Flowchart</p> <p>Continue identification of PHS&amp;T candidates</p> <p>Identify Determine PHS&amp;T contractual requirements</p> <p>Specify PHS&amp;T requirements for Government Furnished Equipment (GFE) and refine PHS&amp;T requirements</p> <p><b>Computer Resources Support;</b></p> <p>Validate computer system requirements</p> <p>Update Software Systems Safety Program Plan</p> <p>Determine contractual software requirements waivers as appropriate</p> <p>Testability Program for Electronics Systems and Equipment applicability</p> <p>Update the CRL-CMP</p> <p>Review and audit Software System Safety Program</p> <p>Determine computer resources support contractual requirements</p> <p>Receive Tactical Digital Standard (TADSTAND) waiver decisions</p> <p>Begin support planning for non-standard computer resources</p> <p>Evaluate computer resources development</p> <p>Design, develop, test and implement software</p> <p>Incrementally review, audit, and approve software</p> <p><b>Technical Data:</b></p> <p>Update Technical Manual Plan (TMP)</p> <p>Determine technical data contractual requirements</p> <p>Continue engineering drawing management</p> <p>Determine technical data contractual requirements</p> <p>Determine technical data contractual Requirements</p>
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**APML ROLES AND RESPONSIBILITIES (cont.)****SYSTEM DEVELOPMENT AND DEMONSTRATION**

<p>Changes to requirements for Product Support (such as unique skills or specialties) that are new or In short supply based upon above trade-offs identified</p> <p>NATO standardization and interoperability requirements in Product Support planning reflected (where appropriate)</p> <p>Product Support considerations and appropriate weight in RFPs, source selection evaluation factors, and contract provisions clearly defined</p> <p>T&amp;E plans are adequate to develop data base to quantitatively assess achievement of:</p> <ul style="list-style-type: none"> <li>• Product Support related thresholds</li> <li>• Adequacy of ALSP and resources impact on cost and readiness objectives</li> </ul> <p>Preliminary list of candidates for contractor support during initial deployment developed</p> <p>Facility designs for contract award in year that facilities will be authorized and funded, initiated, completed and ready</p> <p>Clearly defined Systems Engineering procedures implemented (e.g. Reliability Centered Maintenance approach) to:</p> <ul style="list-style-type: none"> <li>• Influence the evolving system design</li> <li>• Define automated diagnostics requirements</li> </ul> <p>Product Support functional requirements determined</p> <p>Adequacy of the Maintenance Plan confirmed</p> <p>Spares Investment levels are realistic based on readiness objectives, system utilization rates, and demand</p> <p>Manpower requirements can be met from DoD projections</p> <p>Plans are in place for follow-on readiness assessments after system delivery</p>	<p>Execute the TMP</p> <p>Determine technical data contractual requirements</p> <p>Continue engineering drawing management</p>
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## 1.0 OPERATIONAL REQUIREMENTS DOCUMENT (ORD)

### OPERATIONAL REQUIREMENTS DOCUMENT

FOR

TITLE

ACAT \_\_\_\_\_

Prepared for Milestone Decision

Date

1. General Description of Operational Capability
2. Threat
3. Shortcomings of Existing Systems and C4ISR Architectures
4. Capabilities Required
  - ORD Key Performance Parameters (KPP)
    - a. System Performance
    - b. Information Exchange Requirements
    - c. Logistics and Readiness
5. Program Support
  - a. Maintenance Planning
  - b. Support Equipment
  - c. C4I/Standardization, Interoperability, and Commonality
  - d. Computer Resources
  - e. Human Systems Integration
  - f. Other Logistics and Facilities Considerations
  - g. Transportation and Basing
  - h. Geospatial Information and Services
  - i. Natural Environmental Support
6. Force Structure
7. Schedule
8. Program Affordability

#### Appendixes

- A. References
- B. Distribution List
- C. List of ORD supporting analysis
- D. Capstone Requirements Document (CRD)

#### Glossary

- Part I -- Abbreviations and Acronyms
- Part II -- Terms and Definitions

#### Tables

- A -- ORD KPP summary
- B -- Information Exchange Requirements Matrix

**NOTE:**

IAW the DEPSEDEF Memo dated 30 Oct 2002, and the pending revision to the CJCSI 3170.01B, the ORD will be replaced by the ICD for MS B and the CPD at MS C. Current approved ORDs continue to be valid.

**WHO –** CNO, OPNAV – N78 (ORD/CDD/CPD Sponsor), PEO, PM, HQMC

**WHAT -** The validated ORD/CDD/CPD, representing the USER NEEDs, translated into operational performance requirements, for the intended system.

**WHY –**

- Required for entry into MS B (validated by the requirements authority, MDA)
- MS B activities will demonstrate system ability to operate consistent with the validated ORD/CDD/CPD
- Guides the work effort in MS B

**WHEN –** MS B and updated throughout the system life cycle

**WHERE -** DOD Components (OPNAV – N-78, HQMC), NAVAIR

**APML ROLE –**

- Interface with user to ascertain achievement of all supportability aspects in the ORD/CDD/CPD including:
  - Paragraph 4a:
    - KPP for Supportability
    - Supportability as a Product Support performance parameter
    - Operational Availability ( $A_o$ ) as KPP
  - Paragraph 4c:
    - Include measure for  $A_o$
    - Include metrics
    - Develop Aircraft Damage Repair (ADR) requirements
    - Define maintenance levels
  - Paragraph 5:
    - Verify Product Support is traceable to Maintenance Plan, ALSP and the Acquisition Strategy
    - Paragraph 5a describe maintenance tasks.
    - Paragraph 5b describes support equipment

**HOW** – See Appendix B Acquisition Documentation, Tab B-7 Operational Requirements Document ((ORD)/CDD/CPD).

**Appendices/Tabs For Additional Information As Applicable.**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-8	Naval Aviation Maintenance Program (NAMP)
-	C-9	Naval Ordnance Maintenance Management Program (NOMMP)
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-13	Product Support Performance Requirements
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
I	-	Technical Data
-	I-1	Technical Data
J	-	Supply Support
-	J-1	Supply Support
L	-	Facilities
-	L-1	Facilities
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation (PHS&T)
-	N-1	PHS&T
O	-	Manpower /Personnel
-	O-1	Manpower/Personnel
P	-	Training and Trainers
-	P-1	Training
Q	-	Design and Interface
-	Q-1	Design and Interface



## 2.0 ACQUISITION STRATEGY

### WHO – PMA

**WHAT** – Describes the requirement the system is intended to satisfy. The Acquisition Strategy during **System Development & Demonstration** must address the following Support requirements:

- Product support strategy
- Product Support Management Planning
- Cost
- Human systems integration
- Environmental safety, and human health
- Post deployment evaluation
- Long term data access including;
  - competitive sourcing
  - parts obsolescence
  - technology insertion
  - risk assessments
- Demonstration of assured supportability and life cycle affordability, prior to Milestone C, Production and Deployment

**WHY** – To minimize the time and cost it takes, consistent with common sense and sound business practices, to satisfy identified, validated needs, and to maximize affordability throughout a program's useful life cycle.

**WHEN** – Milestone and Decision Reviews (Milestone B, System Demonstration Interim Progress Review)

**WHERE** – USD (AT&L), ASN (RDA), PEO

### APML ROLE –

- Establish current status of support ;
  - Organization (logistics team and IPT assignments)
  - Logistics planning (ALSP) and schedules compared to system program plan for consistency
  - Budget (LRFS) to support plan
  - Contract reflects plan and deliverables needed to achieve exit criteria for milestone B
  - Risks identified and corrective actions planned
  - Strategy and planning for Milestone C ILA requirements
  - **User buy-in**
- Initiate/adjust team plan to achieve ORD/CDD/CPD objectives
- Ensure IPTs review expected results and adjust for shortfalls
- **Communication is key**

**HOW** - See Appendix E Acquisition Strategy, Tab E-2 Cost Estimating/Reduced-Total Ownership Cost (R-TOC).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
B	-	Acquisition Documentation
-	B-1	Commercial off the Shelf/Non-Developmental Item (COTS/NDI)
-	B-2	Concept of Operations
C	-	Product Support Management Planning
-	C-6	Independent Logistics Assessment (ILA)
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-18	Turn-Over File
-	C-20	Post Production Support Plan (PPSP)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-5	Risk Management
H	-	Maintenance Planning
-	H-6	Environmental and HAZMAT Programs
-	H-12	Supportability Planning and Analysis
K	-	Computer Resource Support
-	K-1	Computer Resource Support (CRS)
Q	-	Design and Interface
-	Q-1	Design and Interface

## 3.0 PLANNING AND SCHEDULING

### WHO – APML

#### WHAT – Product Support Planning and Schedules for:

- Overall support planning (ALSP)
- Contracts
- Maintenance planning (analyses)
- Individual Logistics elements
  - Requirements identification
  - Development
  - Delivery
- Test & Evaluation (of organizational support products)
- Demonstration (M-demo, TECHEVAL, Supportability Assessment, validation/verification)
- OPEVAL
- Site activation
- ULSSs
- LRFSS

#### WHY - To manage the support program

#### WHEN – Throughout the system life cycle

#### WHERE – NAVAIR

#### APML ROLE –

- Develop, review, update and distribute an overall logistics support plan, ALSP, through the IPT process and ensure the user support the plan
- Identify the specific schedules required to implement the plan for each primary support element for the system program
- Ensure the logistics team members adhere to their respective areas and provide updates as plans or schedules change as the system evolves
- Conduct periodic overall logistics program reviews to ascertain that all requirements are being met, especially customer expectations
- Ensure discrepancies are documented and actions assigned for item resolution
- Follow-up to ensure all items are resolved timely and to customer satisfaction

**HOW** – See Appendix C Product Support Management Planning, Tabs C-14 Product Support Planning and C-15 Product Support Scheduling.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan)
-	C-16	Site Activation Plan (SAP)
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirements and Funding Summary (LRFS)
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
-	H-11	Repairables
-	H-12	Supportability Planning and Analysis
-	H-15	User's Logistics Support summary (ULSS)
I	-	Technical Data
-	I-1	Technical Data
J	-	Supply Support
-	J-1	Supply Support
-	J-5	Supply Support Management Plan (SSMP)
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation (PHS&T)
-	N-1	Packaging, Handling, Storage, and Transportation (PHS&T)
O	-	Manpower /Personnel
-	O-1	Manpower/Personnel
P	-	Training and Trainers
-	P-1	Training

## 4.0 PLANNING, PROGRAMMING, AND BUDGETING

**WHO** – PM, APML, BFM, IPTs

**WHAT** – The Planning, Programming, and Budgeting System (PPBS) provides a fiscal framework in which the APML must function to acquire Product Support.

The following definitions apply to PPBS:

- **Planning.** In this phase, the military role and posture of the United States and DoD in the world environment is examined by the JCS, considering enduring national security objectives and the need for efficient management of resources. A comprehensive annual review of all issues culminates in the issuance of Defense Guidance.
- **Programming.** In this phase, the DoD components develop proposed programs (their POMs), consistent with the Defense Guidance. These programs shall reflect systematic methods of accomplishing them and the effective allocation of the resources. A review of the Service POMs will be conducted by the Office of the Secretary of Defense (OSD) and the results issued in Program Decision Memorandum (PDM).
- **Budgeting.** In the budgeting phase, the DoD Components develop detailed budget estimates for the budget years of the programs approved during the programming phase. A joint Office of Management and Budget (OMB)/DoD budget review is conducted and the results are issued in Program Budget Decisions (PBDs).

**WHY** – The PPBS provides policy, procedures and responsibilities relating to programming and budgeting.

**WHEN** - Annually, updated 3 times per year.

**WHERE** – OPNAV N-78, HQMC, NAVAIR

### APML ROLE –

- Identify the system program Work Breakdown Structure (WBS)
- Ensure each support requirement has an identity or association
- Identify, develop, review, within the IPT process, the system PM process for PPBS requirements and schedules
- Ensure team members adhere to the process for funding of product support and ensure requirements are planned, programmed, budgeted within the system.
- IPT interface and communication is paramount to successful execution

**HOW** – See Appendix D Planning, Programming, and Budgeting System, Tab D-3 Programming, Budgeting, Fiscal Accounting.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
D	-	Planning, Programming, and Budgeting System
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy

## 5.0 PROCUREMENT

**WHO** – PMA, APML, APMSE, BFM, PCO, IPT

**WHAT** – Obtaining Product Support using Product Support Contract Requirements described by:

- Contract Line Items
  - Product Support Specification
  - Complying with established federal acquisition policies and regulations

**WHY** – To provide support products necessary for establishment of maintenance capability and material support of the intended system and the user's needs.

**WHEN** – Evolutionary, throughout systems acquisition in accordance with the ORD/CDD/CPD.

**WHERE** – NAVAIR, Prime Contractor (Procurement Planning Conferences, Alpha contracting sessions.)

### APML ROLE –

- Initiates and or coordinates through the IPT process, applicable procurements requiring Procurement Planning Conference's (PPCs) and scheduling
- Sponsors, initiates or ensures IPT logistics representative presents the support item to be procured to **PPC**, convened by the program or acquisition manager
- The PPC accomplishes the procurement planning process:
  - Discuss and plan Procurement Request (PR) actions
  - Highlight key issues and actions required to execute the procurement
  - Establish PR processing milestones
- Performs procurement planning by developing and maintaining:
  - ALSP (requirements identification and scheduling)
  - LRFS
  - Identifying product support contract requirements



**HOW** – See Appendix E Acquisition Strategy, Tab E-4 Procurement.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
B	-	Acquisition Documentation
-	B-1	Commercial off the Shelf/Non-Developmental Item (COTS/NDI)
-	B-3	Foreign Military Sales (FMS)
D	-	Planning, Programming, and Budgeting System
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-4	Procurement
-	E-6	Warranties
G	-	Performance based Logistics
-	G-1	Performance Based Logistics

## 6.0 PRODUCT SUPPORT EVALUATION

### WHO – APML

**WHAT** – Evaluating planned versus actual product support progress to ascertain achievement of planned maintenance capability, material support and user's needs.

- Evaluation of Competing Contractors
- Evaluating Prime Contractor Proposals
- Evaluating Analytical Data and Techniques
- Evaluating the Adequacy of Product Support
- Evaluating Organic Maintenance Transition Status
- Readiness Evaluation

**WHY** – This feedback is an essential input to the APML's decision process. Based on the results of evaluations, the APML can adjust and redirect the efforts of personnel and organizations to ensure Product Support objectives are met.

**WHEN** – Pre-systems acquisition initially and throughout the system life cycle

**WHERE** – NAVAIR, Fleet, Prime Contractor

### APML ROLE –

- Ensure required and necessary product support program elements are evaluated
- Use results to manage requirements to achieve overall objectives including cost, schedule and performance of the logistics program
- Ensure LEMS perform required and necessary responsible element evaluation
- Major product support evaluations are required for :
  - Contract/contractor performance
  - Support products during T&E
  - OPEVAL (preparation readiness)
  - ILA
  - Initial Site Activation
  - IOCSR
  - System program reviews
  - Acquisition Milestone reviews

**HOW** – See Appendix C Product Support Management Planning, Tab C-10 Product Support Evaluation.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-3	Naval Aviation Readiness Integrated Improvement Program/Boots on the Ground
-	C-6	Independent Logistics Assessment (ILA)
-	C-19	Status Monitoring
-	C-22	Operations Test Readiness Review (OTRR)
E	-	Acquisition Strategy
-	E-5	Risk Management
H	-	Maintenance Planning
-	H-5	Flexible Sustainment
-	H-6	Environmental and HAZMAT Programs
-	H-8	Maintenance Plan (MP)
K	-	Computer Resource Support
-	K-4	NALCOMI Optimize Organizational Maintenance Activity (OOMA)
L	-	Facilities
-	L-21	Ship Installation
M	-	Support Equipment
-	M-1	Support Equipment Management

## 7.0 STATUS MONITORING

### WHO – APML

**WHAT** – Awareness and continuous observation of the support program's progress against established plans. Comprises the following actions:

- Schedules
- Budget and Financial Execution
- System Performance

### WHY –

- The acquisition process demands it
- A management rule
- OPTEMPO requires situational awareness at all times

**WHEN** – Throughout the system Life Cycle

**WHERE** – NAVAIR, IPTs, Fleet, Prime Contractor

### APML ROLE –

- Overall magnitude and attentionInt for detail of an Major Defense Acquisition Plan (MDAP) or smaller ACAT program requires immediate and continuous availability of information to be informed and others as well
- Precise emphasis is based on individual needs of the manager and demand for information, adjust accordingly
- Investigate pre-formatted types of information and reporting techniques to reduce workload
- **COMMUNICATION!!!**

**HOW** – See Appendix C Product Support Management Planning, Tab C-19 Status Monitoring, and other C tabs as applicable.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
D		Planning, Programming, and Budgeting System
E		Acquisition Strategy
F		Configuration Management
G		Performance Based Logistics
H		Maintenance Planning
I		Technical Data
J		Supply Support
K		Computer Resource Support
L		Facilities
M		Support Equipment
N		Packaging, Handling, Storage, and Transportation (PHS&T)
O		Manpower /Personnel
P		Training and Trainers
Q		Design and Interface

# APML HANDBOOK



## SECTION III

### *Production & Deployment*

## **SECTION III PRODUCTION AND DEPLOYMENT**

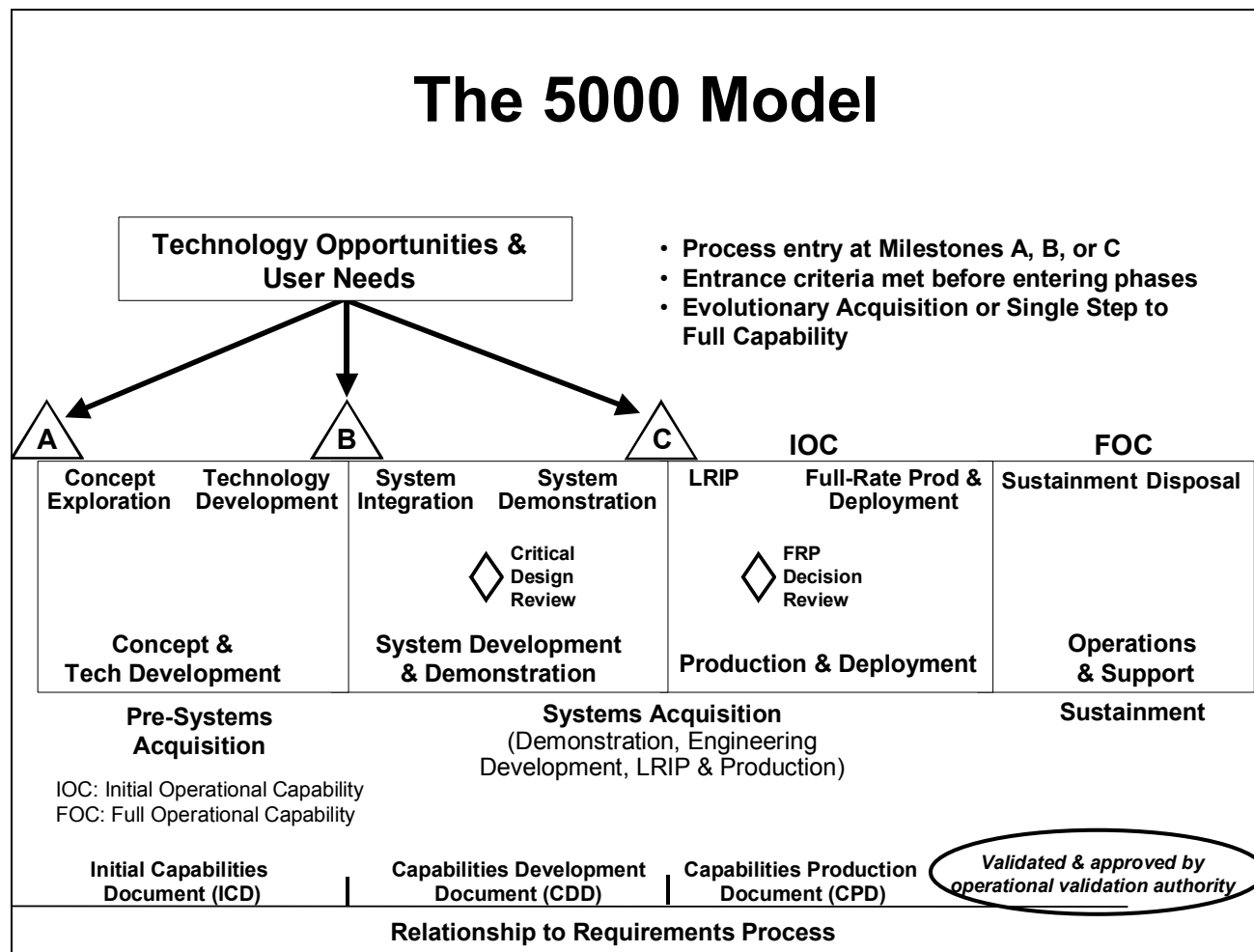
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## INTRODUCTION



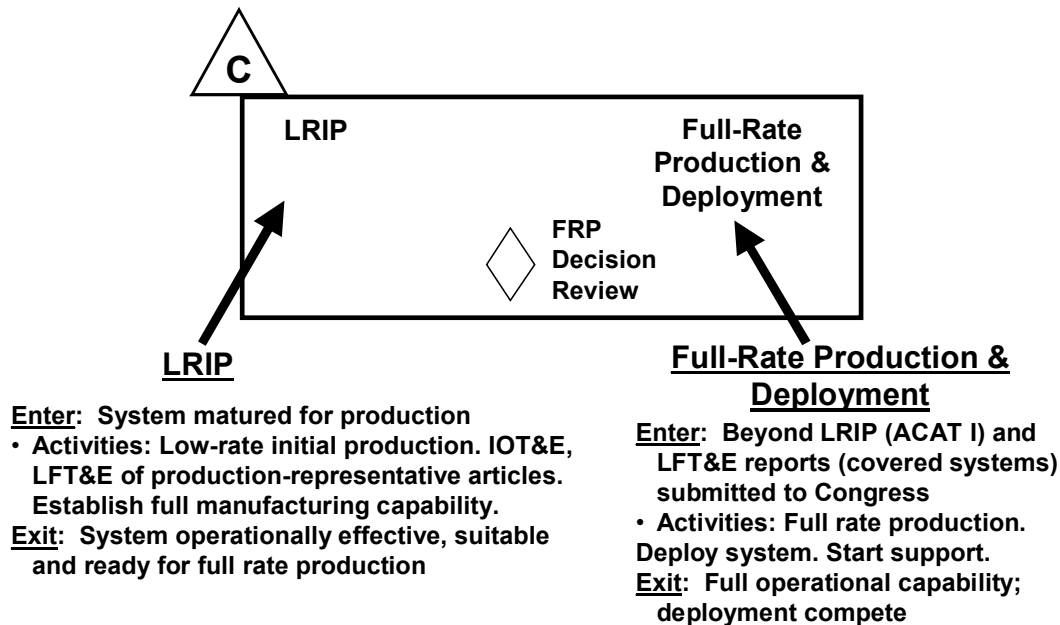
## SYSTEMS ACQUISITION ACTIVITY

### Situation:

- Milestone B SD&D efforts complete
- System (developmental) has been demonstrated in its intended environment
- System met or exceeded Milestone B exit criteria
- MDA review conducted to approve completion Milestone B and or Milestone C entry

## MILESTONE C

### Production & Deployment Phase



#### **Entrance Criteria: (regardless of the entry point)**

- Acceptable performance in DT&E and Operational Assessment (OA)
- No significant manufacturing risks
- Manufacturing process in control (if MS C is for full-rate production)
- Approved ORD/CPD
- Acceptable interoperability
- Acceptable operational supportability
- Compliance with the DoD Strategic Plan
- Affordable throughout life cycle
- Optimally funded and properly phased for rapid acquisition

**Milestone Decision Authority (MDA) approves:**

- Updated Acquisition Strategy and Acquisition Program Baseline
- Entry into LRIP for systems that require a LRIP, into production or procurement for systems that do not require LRIP, or into limited deployment for MAIS programs or software intensive systems with no production components
- Exit criteria for LRIP if appropriate

**Remember:**

- A favorable Milestone C decision authorizes the PMA to commence LRIP or limited deployment for MDAPs and major systems
- The PMA is only authorized to commence full-rate production with further approval of the MDA
- ***There is normally no more than one decision*** (i.e. either low-rate or full-rate) at the Defense Acquisition Executive (DAE)-level for MDAPs
- Milestone C can be reached directly from pre-systems acquisition (e.g., a commercial product) or from System Development and Demonstration phase
- The Production & Deployment Phase can be entered either directly out of Technology Opportunities & User Needs, the Concept & Technology Development Phase, or from the System Development & Demonstration Phase.

**Purpose of Milestone C:**

- LRIP (if required) and Full-Rate Production achieved
- Monitor systems- correct shortcomings
- Continue testing
- System is produced and deployed; IOC and Full Operation Capability (FOC) attained

**Primary Activities:**

- Initial Operational Test & Evaluation (production representative)
- Live Fire Test & Evaluation (production representative articles)
- LRIP Work Effort
- Full-Rate Production (FRP) Decision Review
- Full-Rate Production & Deployment Work Effort

**APML CONSIDERATIONS:**

- Coordinate final preparation of support elements to support IOT&E
- Initiate required changes to support products to rectify deficiencies
- Initiate LRIP and or FRP contract specification
- Ensure logistics planning and contract requirements reflect product support elements necessary for initial support of the system including:
  - Organization (IPT structure)
  - Planning and Scheduling
  - Programming, Budgeting and Fiscal Accounting
  - Procurement
  - Evaluation
  - Fleet Support Team
  - Status Monitoring
  - Fleet interface

**APML ROLES AND RESPONSIBILITIES**

<b>PRODUCTION AND DEPLOYMENT</b>	
<p>ORD (S, \$, Ao Drivers) updated S IPT continued RILSD continued Acquisition Strategy updated FST continued Production Prototype Model developed Pilot Production begins Production Acceptance Test and Evaluation (PAT&amp;E) conducted Fleet Introduction Team established Fleet Qualification Review conducted Fleet Introduction begins Full Rate Production begins FOT&amp;E conducted Physical Configuration Audit (PCA) conducted Product Baseline established Item, Process, and Material Specifications developed Follow-on Production Models produced ALSP updated LRFS updated Supply Support Management Plan implemented System Safety Program Plan implemented Maintenance Plans (and Support Equipment Recommendation Data (SERDs)) implemented ULSS develop and deliver Site Activation Planning update Facilities Requirements Document (FRD) updated CRL-CMP updated TEMP updated Contractor Maintenance Support continued Repair of Repairables implemented Engineering and Technical Services (ETS) implemented Readiness Improvement Programs begin Operational Safety Improvement Program (OSIP) begins Engineering Change Proposal (ECP) Program continued</p>	<p><b>Management:</b> Update ALSP Update ULSS Update LRFS Execute requirements for IOCSR Execute contractual Product Support requirements Provide Product Support inputs to TEMP for Follow-on Operational T&amp;E (FOT&amp; E) Continue CM interface program Update/maintain Post Production Support Plan Identify direct fleet support requirements Participate and Update Weapon System Planning Documents (WSPD) Evaluate contractor's performance Evaluate system performance Review program documentation Conduct logistics reviews (i.e. ILSMT, Maintenance Engineering Logistics Review (MELR, Fleet Reviews, etc) Maintain liaison with other APMLs Maintain feedback mechanisms Update PBL Planning Evaluate International Programs/Foreign Military Sales (FMS) considerations Review Operations Testing Support Requirements for FOT&amp;E Maintain Obsolescence Planning Participate in Program Related Logistics (PRL)/Program Related Engineering (PRE) Requirements Determination Process Review Post Production Planning and Production Line Shutdown GFE and Contractor-Furnished Equipment (CFE) Management</p>

## APML ROLES AND RESPONSIBILITIES (cont.)

PRODUCTION AND DEPLOYMENT	
<p>Asset Positioning begins            Technical Repair Standards develop            Activity Manning Document develop            Depot Memorandum of Agreement update            Transition Plan update            Post Production Support Review conducted            FMS begins  <u>S</u> Assessment conducted            I-level Maintenance capability established            Final Support Plan develop            IOC establish            Interim Support begins            Conduct ILA conducted            For ECPs:</p> <ul style="list-style-type: none"> <li>• <u>S</u> T&amp;E Strategy update</li> <li>• Use Study update</li> <li>• Technological Approaches update</li> <li>• Failure Modes and Effects Analysis (FMEA) &amp; R&amp;M Analyses (Weapons Replaceable Assembly (WRA) and Shop Replaceable Assemble (SRA) level) conducted</li> <li>• Preventive Maintenance Analysis (implement RCM) conducted</li> <li>• Corrective Maintenance Analysis conducted</li> <li>• Task, Skills, and Time Line Analysis conducted</li> <li>• Level Of Repair Analysis (LORA) conducted</li> <li>• <u>S</u> Constraints and Requirements updated</li> <li>• Maintenance Plan updated</li> <li>• Support Performance Requirements updated</li> <li>• <u>S</u> Tested, Evaluated, and Verified</li> <li>• Logistics Support acquired</li> <li>• Trade Studies</li> </ul>	<p><b>Maintenance Planning:</b>            Review/update maintenance plans (ALSP Chapter)            Determine Contractual Maintenance Requirements (CETS/Contractor Maintenance Services (CMS))            Update Maintenance Assistance Modules (MAMs) requirements            Update Depot Plan            Update RCM Preventive Maintenance (PM) documentation            Sustained Maintenance Planning Analysis            Critical Safety Item List Identification</p> <p><b>Supply Support:</b>            Determine contractual Supply Support Requirements (Initial Supply Support (ISS)/Repair Of Repairables (ROR)            Update Supply Support Management Plan (SSMP), ISL, Long Lead Items List, Spares Acquisition Integrated w/Production, Provisioning Technical Directives            Negotiate &amp; formalize MSD            Review Allowance Parts List (APL) and Allowance Equipage List (AEL)</p> <p><b>Manpower, Personnel &amp; Training:</b>            Execute Personnel &amp; Training contractual requirements            Update Training Planning Program Methodology (TRPPM)            Update Training Program using TECHEVAL/OPEVAL results            Provide Initial Training            Provide Life Cycle Manpower &amp; Personnel support            Provide Life Cycle support for Technical Training Equipment (TTE) &amp; Training Devices (TDs)            Review of CBT Plan</p>

## APML ROLES AND RESPONSIBILITIES (cont.)

PRODUCTION AND DEPLOYMENT	
<p>Modeling and Simulation (Joint Operations and Logistics Tool (JOLT), Comprehensive Aircraft Support Effectiveness Evaluation (CASEE), Logistics Composite Model (LCOM)) exercised</p> <ul style="list-style-type: none"> <li>Analyze R&amp;M allocations and trade-off</li> <li>Candidate support and sparing strategies evaluated</li> <li>Assessments using test data updated</li> </ul> <p>Identify R&amp;M critical items identified</p> <p>Best mix of Product Support identified:</p> <ul style="list-style-type: none"> <li>Manpower</li> <li>Spares</li> <li>Support Equipment</li> <li>Facilities</li> </ul> <p>Weapon systems capabilities evaluated</p> <p>The impact of changes to be evaluated:</p> <ul style="list-style-type: none"> <li>Maintenance</li> <li>Supply related requirements</li> <li>Work load</li> <li>Concepts</li> </ul> <p>Policies Impact of design alternatives on underlying logistics and supportability factors investigated</p> <p>Measure Of Effectiveness (MOE)</p> <p>Operations (sorties flown, missions canceled)</p> <ul style="list-style-type: none"> <li>Activities (average time to complete, resource wait time)</li> <li>Personnel (man-hours utilized as a prime and/or substitute)</li> <li>Supply (number of "spares" back ordered)</li> <li>Shop repair (number of items repaired)</li> <li>Equipment (equipment used)</li> <li>Aircraft (number of aircraft available)</li> </ul> <p>A<sub>o</sub> should also be applied to the modeling and definition</p> <p>Independent Cost Estimate (ICE) updated</p> <p>Manpower Estimate (TRPPM) updated</p> <p>Modeling and Simulation (JOLT, CASEE, LCOM) Products</p>	<p><b>Facilities:</b></p> <p>Review/update FRD and MILCON plan for Ashore/Afloat requirements</p> <p>Ensure facilities are operational</p> <p>Implement Equipment Facility Requirements (EFRs) Plan (Phase III)</p> <p><b>Support Equipment:</b></p> <p>Execute SE, Peculiar Support Equipment (PSE), Test Program Set (TPS) and SERD updates</p> <p>Execute SE contractual requirements</p> <p>Review proposed design &amp; schedule change for SE impacts</p> <p>Deliver SE and related products</p> <p>Validate SE effectiveness</p> <p>Revise SE planning affected by second sourcing and transition of support from contractor to Navy activity</p> <p>Review Meteorological Calibration (METCAL)</p> <p>Review Support Equipment Resources Management Information System (SERMIS)</p> <p>Develop plans for replacement of SE because of its obsolescence</p> <p><b>PHS&amp;T:</b></p> <p>Execute PHS&amp;T requirements</p> <p>Execute PHS&amp;T contractual requirements</p> <p>Monitor and evaluate PHS&amp;T Program execution</p> <p>Review Total Asset Visibility</p>



**APML ROLES AND RESPONSIBILITIES (cont.)****PRODUCTION AND DEPLOYMENT****JOLT, CASEE, LCOM Reports:**

- Number of sorties scheduled, launched, flown, and canceled by mission type
- Overall squadron readiness by Equipment Operational Capability (EOC) code
- Maintenance actions by Work Unit Code (WUC)
- O-level maintenance man-hours for scheduled and unscheduled maintenance and support
- I-level maintenance man-hours
- O- and I-level elapsed maintenance time
- Maintenance man-hours per flight-hour
- Failures by WUC
- Number of requests for spares

**Technical Data:**

Execute the Technical Manual Plan (TMP) as highlighted in the ALSP

Execute technical data contractual requirements

Ensure placards are developed

Continue Engineering Drawing management

Track closure of TPDR backlog

Update Engineering Drawings

Execute Engineering Drawing repository requests and reproduction procedures

Execute archival and disposal of drawings

Update Configuration Data, and Technical Manual <sup>TM</sup> source data as required for update of engineering drawings

Consider Joint Aviation Technical Data Integration (JATDI) is considered in TM update planning

Contract for Technical Data consistent with Weapon System Support Concept

**Computer Resources Support:**

Transfer software support responsibility to Software Support Activity

Review and maintain class I/II software change procedures and associated documentation

Update CRLCMP

**Design Interface:**

Update Reliability and Maintainability (R&M) performance parameters

Review R&M Program Plan

Update Human Factors engineering Plan

Update Standardization planning

Update CM Plan

Update System Safety Program Plan

## 1.0 PREPARING TO MANAGE PRODUCTION

### WHO – APML

### WHAT –

- Confirming the team plan with emphasis on affordability
- Putting product support contractual requirements in order
- Validating and verifying deliverable requirements and schedules
- Organization (established support team)
- Interface mechanism established (contractors to government communication processes established)
- Monitoring, review and evaluation criteria identified

**WHY –** To affirm the people, facilities, technical data, material, processes, tooling, and equipment for manufacturing, assembling, operating and delivering the system intended to meet the users needs is performed on schedule and within cost.

**WHEN –** During Milestone B and leading up to initiation of the Milestone C (LRIP) and subsequent system contracts

**WHERE –** NAVAIR, Prime Contractor

**APML ROLE –** Continuously look for opportunities to reduce support costs

- Confirm any final contract requirements involving support specification, deliverables and planning
- Conduct or ensure support representation is provided for contract negotiation of support requirements.
- Initiate any personnel actions to ensure resources are in place to manage, receive and execute contract requirements
- Ensure LRFS reflects required budget and funding
- Ensure design change process activities are well defined and coordination with APM (SE) is maintained to ensure changes are supportable
- Communication is key

**HOW** – See Appendix E Acquisition Strategy, Tab E-4 Procurement.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-10	Product Support Evaluation
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-12	Product Support Organization
-	C-13	Product Support Performance Requirements
-	C-17	Team Work Plan (TWP)
D	-	Planning, Programming, and budgeting System
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-3	Programming, Budgeting, Fiscal Accounting
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-3	Earned Value Management (EVM)
-	E-4	Procurement
-	E-5	Risk Management
-	E-6	Warranties
G	-	Performance Based Logistics
-	G-1	Performance Based Logistics
J	-	Supply Support
-	J-1	Supply Support

## 1.1 Product Support Management Organization

**WHO** – PM, APML

**WHAT** – The Program Manager/APML define and establish the product support team based on IPT structure. IPT Charters and Team Assignment Agreements (TAAs), with clear roles and responsibilities should be approved by the IPT and competency leads.

**WHY** – Ensures the right amount of resources required, at the proper time, with the appropriate skills and training, in the right location, are available to execute the processes to produce and support the product.

**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, IPTs, Prime Contractor

### APML ROLE –

- Review, update and or define the product support organization required to support the system program
- Ensure budget and funding resources exist to support organization
- Review IPT Charters and TAAs for allocating existing or acquired resources
- Identify training deficiencies and ensure required IPT members Individual Development Plans (IDPs) reflect requirements
- Plan team growth based on expanded system program requirements

**HOW** – See Appendix C Product Support Management Planning, Tabs C-12 Product Support Organization.

### Appendices/Tabs For Additional Information As Applicable

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-17	Team Work Plan (TWP)
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
G	-	Performance Based Logistics
-	G-5	Performance Based Logistics

## 2.0 PLANNING AND SCHEDULING

**WHO –** APML

**WHAT –**

- Planning for the logistics elements required support products
- Developing, updating and reviewing product support schedules based on planned activities and events for the system program.
  - ALSP (contains master schedules for all Integrated Logistics Support (ILS) elements)
  - ULSS's
  - Site Activation Plans (SAPs)
  - SSMP
  - WSPD

**WHY –** To plan and schedule the overall Product Support program

**WHEN –** Throughout the life cycle

**WHERE –** NAVAIR, IPTs, Prime Contractor

**APML ROLE –** Responsible for the development, update, review, and delivery of required planning documentation, and the associated scheduling of all product support requirements to meet intended system program milestones and events

**HOW** – See Appendix C Product Support Management Planning, Tab C-14 Product Support Planning and C-15 Product Support Scheduling.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-2	Concept of Operations
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
F	-	Configuration Management
-	F-1	Configuration Management (CM)
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
I	-	Technical Data
-	I-1	Technical Data
J	-	Supply Support
-	J-1	Supply Support
K	-	Computer Resource Support (CRS)
-	K-1	Computer Resource Support
L	-	Facilities
-	L-1	Facilities
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation (PHS&T)
-	N-1	PHS&T
O	-	Manpower /Personnel
-	O-1	Manpower/Personnel
P	-	Training and Trainers
-	P-1	Training
Q	-	Design and Interface
-	Q-1	Design and Interface

### 3.0 PROGRAMMING, BUDGETING, AND FISCAL ACCOUNTING

#### **WHO – APML**

**WHAT –** The APML prepares and maintains program documents for the budget process, the internal Navy and DoD budget review process, and the requirement for fiscal accountability.

**WHY –** Programming, budgeting, and fiscal accounting are used to support DoD, Secretary of the Navy (SECNAV), and OPNAV requirements to identify product support requirements for incorporation into the Program Objectives Memorandum (POM).

**WHEN –** Continuously throughout the system life cycle.

**WHERE –** NAVAIR, IPTs

#### **APML ROLE –**

- Identify product support requirements for the system program work breakdown structure with Business Financial Manager (BFM), IPT and support teams
- Ensure team requirements reflect necessary funding for each element
- Update the LRFS to reflect requirements, funding control, and funding shortfalls for each element
- Attend or provide representative for all Budget reviews

**HOW –** See Appendix D Planning, Programming, and Budgeting System, Tab D-3 Programming, Budgeting, and Fiscal Accounting.

#### **Appendices/Tabs For Additional Information**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
D	-	Planning Programming, and Budgeting System
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-2	Cost Estimating/Reduced-Total Ownership Cost (R-TOC)



## 4.0 PROCUREMENT

**WHO** – APML, Procuring Contracting Officer (PCO), BFM

**WHAT** – Acquiring the product support data, hardware, labor and resource requirements necessary to evaluate, deliver and sustain the user's operational requirements for availability, supportability and affordability. Activities include:

- Appropriate contract vehicles
- Issuing orders against the orders clause side of the production contract
- Ensure the preparation of the ROR contract requirement prior to initial operations
- Initiating required documents for product support labor (field activities, Prime contractor support, contractor support resources) for production and sustainment
- Acquiring ECP support (Technical data, mod team labor, materials)
- Competition or sole source contract requirements implementation

**WHY** – The primary process for acquiring the product support requirements identified to support the system program.

**WHEN** – Throughout the life-cycle

**WHERE** – NAVAIR, IPTs, Prime Contractors

**APML ROLE** – Ensures product support IPT requirements determination, coordination, process execution and funding allocation are executed to the contracting schedule for procurements

- Ensures product support procurement activities are compliant with policies and procedures.
- Participate in the Procurement Planning Conference (PPC convened by the program or acquisition manager)
- Discuss and plan PR actions
- Highlight key issues and actions required to execute the procurement
- Establish PR processing milestones
- Execute and track status of all procurements

**HOW** – See Appendix E Acquisition Strategy, Tab E-4 Procurement.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
F	-	Configuration Management (CM)
-	F-1	Configuration Management (CM)

## 5.0 PRODUCT SUPPORT EVALUATION

### WHO – APML

**WHAT** – Evaluating, assessing and estimating the product support program requirements and products. Examples of APML. LEM and Logistics Manager (LM) activities include:

- Contract proposals
- Contract compliance
- Status of O, I and D-level site activations
- Actual versus planned spares usage versus the S Analysis spares predictions.
- Traceability between S Analysis and Technical Manuals
- Actual Automated Test Equipment (ATE) run times versus run times predicted by S Analysis
- Results of OPEVAL for update of S Analysis data
- IOCSR results
- Readiness and maintainability offenders
- Evaluation of ECPs / TDs

**WHY** – Provides the APML:

- Awareness (required activity progress)
- Insight (what met or fell short of the objective) to make timely adjustments resulting in no or minimal impact on program schedule
- Feedback (opportunities for lessons learned)

**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, IPTs, Prime Contractor

### APML ROLE –

- Establish requirements for effective product support evaluations and coordinate across IPTs
- Adjust product support to rectify findings where shortfalls or non-performance occurred
- Track actions and status until situation resolved
- Incorporate process lessons learned to prevent future occurrences
- Ensure findings and results provide throughout IPTs for team awareness

**HOW** – See Appendix C Product Support Management Planning, Tab C-10 Product Support Evaluation.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
B	-	Acquisition Documentation
-	B-4	Metrics
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-14	Product Support Planning
D	-	Planning, Programming, and Budgeting System
-	D-2	Budgeting and Execution
-	D-4	Program Related Logistics (PRL)
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-6	Warranties
H	-	Maintenance Planning
-	H-2	Component Tracking/Engine Component Tracking (COMTRAK/ECOMTRAK)
-	H-3	Depot Determination
-	H-7	Integrated Maintenance Concept (IMC)
-	H-10	Reliability Centered Maintenance (RCM)
-	H-11	Repairables
-	H-13	Source, Maintenance and Recoverability (SM&R)
J	-	Supply Support
-	J-3	Repair of Repairables (ROR)

## 6.0 STATUS MONITORING

**WHO** – APML, IPTs

**WHAT** – Management attention to the progress of the support program against planned activities and events.

- To document planned or required activity achievement
- Oversee program schedule, cost, and performance
- Monitor customer focused performance requirements (Availability, Turn Around Time (TAT) against actual status

**WHY** –

- Management awareness
- Provides real time status of planned events vs actual
- Provides information to make informed decisions

**WHEN** – Throughout all system life cycle phases

**WHERE** – NAVAIR, IPTs, FST, Prime Contractor

**APML ROLE** –

- Establish methods individually and or within the IPTs for requirements monitoring
- Document results and distribute based on findings
- Initiate actions based on findings and assign, track and coordinate closure across the IPTs
- Report program impacts to management and coordinate actions necessary for closure or IPT coordination

**HOW** – See Appendix C Product Support Management Planning, Tab C-19 Status Monitoring.

### Appendices/Tabs For Additional Information As Applicable

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-4	Metrics
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan
-	C-10	Product Support Evaluation
-	C-13	Product Support Performance Requirements
-	C-14	Product Support Planning
E	-	Acquisition Strategy
-	E-3	Earned Value Management (EVM)

## 7.0 AIRCRAFT DAMAGE REPAIR

**WHO** – NAVAIR: Cherry Point (CHPT)/ Jacksonville (JAX)/ North Island (NI)/ ATSUGI/ NAPLES: Naval Air Depot, PM, APML, FST, Prime Contractor

**WHAT** – Develop repair procedures and support requirements to repair operational aircraft due to incident damage, crash damage and natural phenomenon. Identify tooling, fixtures and jigs, technical data package kits, manpower and material resources necessary to return damaged aircraft to an operationally capable status.

**WHY** – If Aircraft Damage Repair (ADR) design and Product Support requirements were not specified on the System Integration and System Demonstration contracts but the aircraft is listed on the CNO ADR aircraft priority list, APML action is required. ADR repair procedures and other required Product Support are developed following a disciplined approach that includes threat analysis, aircraft damage assessment, S Analysis, and engineering development of repair procedures. Required Product Support is based on S Analysis (see block 8, the update to block 8, and block 12. APML actions required include:

- Review and approve S Analysis database and Maintenance Plan revisions produced by the FST by tasking the maintenance engineering LEM.
- After approval of the S Analysis database and Maintenance Plan revisions, take appropriate action through the LEMs for ADR-related Product Support development, acquisition, and fielding within aircraft program funding limitations.
- Required to return damaged aircraft to an operationally capable condition.

**WHEN** – Specified in the product support statement of work for the production contract.

**WHERE** – NAVAIR: CHPT/JAX/NI/ATSUGI/NAPLES: Naval Air Depot, Fleet Cite, Commercial Contractor

### APML ROLE –

- Initiate requirements identification with APMSE and coordinate with the IPTs on activities to ensure necessary planning, budgeting and funding of support elements are accomplished
- Ensure support plans reference Aircraft Battle Damage Repair (ABDR) requirements and planning

**HOW** – See Appendix H Maintenance Planning, Tab H-01 Aircraft Battle Damage Repair (ABDR).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
-	H-14	Work Unit Code (WUC)
Q	-	Design and Interface
-	Q-1	Design and Interface

# APML HANDBOOK



## SECTION IV

### *Operations and Support*



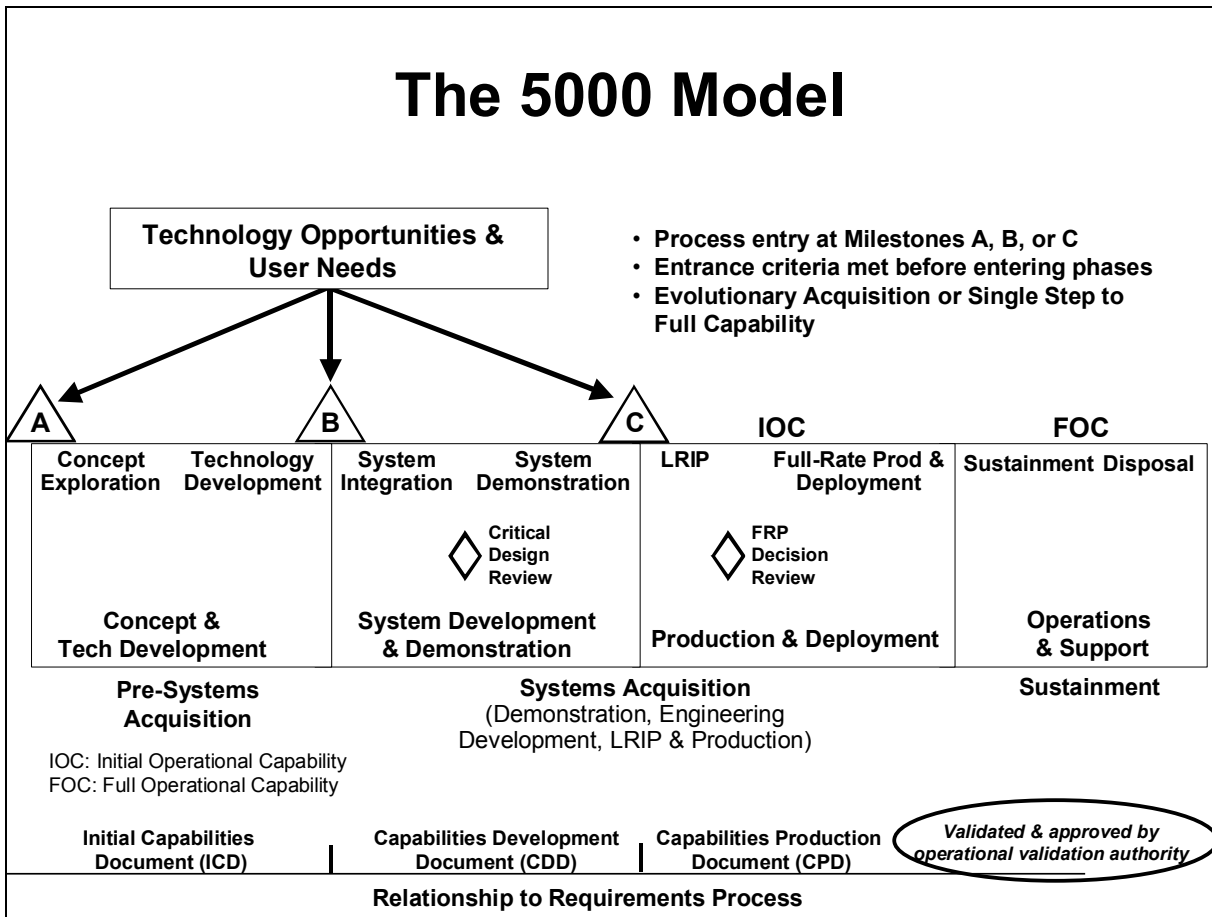
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## INTRODUCTION



## Operations and Support Phase

### Situation:

- Emphasis shifts from design/development engineering to supporting the fielded system
- Operational units established and readiness monitored
- Test and Evaluation continues
- Operational/support problems identified
- Product Improvement/Service Life Extension Programs energized, if required
- System disposed of at the end of its useful life

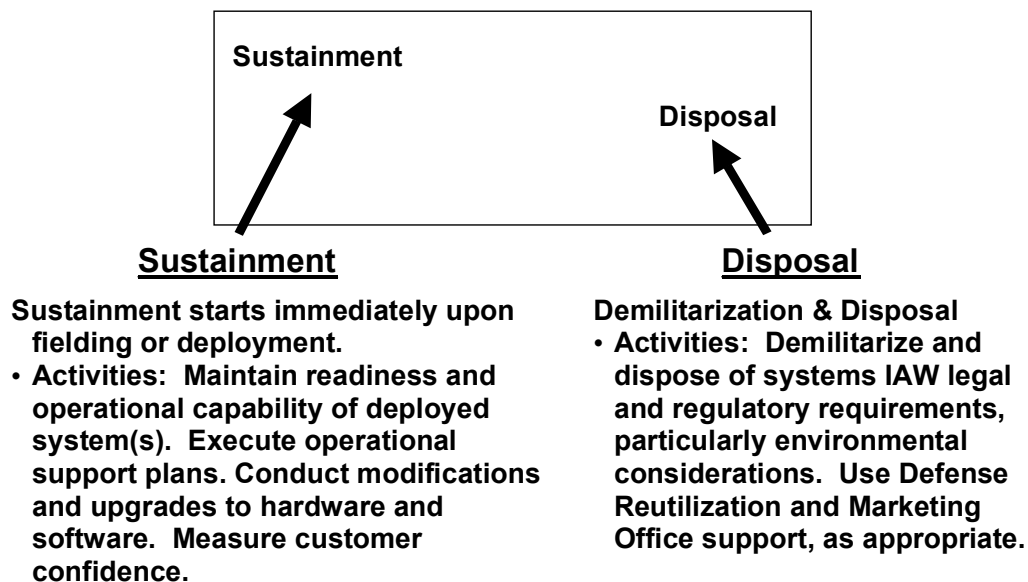
**Status:**

- MDA approved Milestone C, LRIP
- MDA approved Full Rate Production (FRP) and Deployment
- Initial Operational Capability (IOC) established (see notes 1 & 2)
- Transition to or Full Operational Capability (FOC) established
- Follow-On Test and Evaluation (FOT&E) program execution as appropriate

**NOTES:**

1. IAW USC Title 10, Section 2464, Core Depot logistics capability will be established four years after IOC (IOC + 4 Years).
2. All IOCSR review actions completed or solutions accepted by Flag review board.

## Operations & Support Phase



***Purpose***

- Execution of a support program that meets operational support performance requirements
- Decisions reflect most cost-effective solutions throughout the life cycle
- Disposal/Demilitarization and long term storage planning execution when decisions call for system termination from service and inventory.

***Primary Activities******Sustainment:***

- Includes supply, maintenance, transportation, sustaining engineering, data management, configuration management, manpower, personnel, training, habitability, survivability, safety, (including explosives safety), occupational health, protection of Critical Program Information (CPI), anti-tamper provisions, Information Technology (IT) (including NSS) supportability and interoperability, and environmental management functions.
- Effective sustainment of weapons systems begins with the design and development of reliable and maintainable systems through the continuous application of a robust systems engineering methodology. As part of this process, the PM shall employ human factors engineering to design systems that require minimal manpower, provide effective training; utilize representative personnel; and are suitable (habitable and safe with minimal environmental and health hazards) and survivable (for both the crew and equipment). For business area capabilities, the PM shall employ commercially available frameworks and solutions. A toolkit of best practices is available at <http://deskbooktransition.dau.mil>.
- The PM shall work with the users to document performance and support requirements in performance agreements specifying objective outcomes, measures, resource commitments, and stakeholder responsibilities. The Military Services shall document sustainment procedures that ensure integrated combat support.
- The DoD Components shall initiate system modifications, as necessary, to improve performance and reduce ownership costs.
- PMs shall optimize operational readiness through embedded diagnostics and prognostics, serialized item management, Automatic Identification Technology (AIT), and iterative technology refreshment.
- PMs shall ensure that data syntax and semantics for high capacity AIT devices conform to ISO 15434 and ISO 15418.

- The Services, in conjunction with the users shall conduct continuing reviews of sustainment strategies, utilizing comparisons of performance expectations as defined in performance agreements against actual performance measures. PMs shall revise, correct, and improve sustainment strategies as necessary to meet performance requirements.

***Disposal:***

- At the end of its useful life, a system must be demilitarized and disposed in accordance with all legal and regulatory requirements relating to safety (including explosives safety), security, and the environment. During the design process, acquisition program managers shall document hazardous materials used in the system, and plan for demilitarization and disposal.

**APML ROLE-**

- Review sustainment planning, ALSP, Post Production Support Plan (PPSP), Depot capability plan (if required), Disposal or storage, and LRFS to ensure adequate resources are identified to execute the support program
- Define customer expectations
- IPT and user interface throughout process imperative
- Overall sustained product support becomes IPTs focus.
- Emphasize product support program foundation be Performance based

## APML ROLES AND RESPONSIBILITIES

<b>OPERATIONS AND SUPPORT</b>	
<p>           ILS Documentation Update            Practical Software Measurement (PSM)                Planning requirements update            ALSP update            LRFS update            ILS Contracts review            Obsolescence Issues review            In-service support sustained            Fleet readiness reviews            Operation Activity Group (OAG) reviews            Aviation Maintenance Supply Readiness                (AMSR) Voice Teleconference (VTCs)            Evolutionary Acq. Requirements (CM Plan)            Service Life Extension Program                (SLEP)/Remanufacture (REMAN)/                Conversion In Lieu Of Procurement                (CILOP)/Block (BLK) Upgrade            ECP/ Mod programs considerations            Prime Support continuation            Total Ownership Cost (TOC), (Aircraft                Readiness Issues (ARIs), Logistics                Engineering Proposals (LECPs), Cost                Reduction Improvement Initiatives                (CREIs) activity            PBL/DVD opportunities            Integrated Maintenance Concept (IMC)            Implementation/sustainment            Continuous User Interface         </p>	<p> <b>ILS Management</b>            TWP Update            Maintain and update PSM Planning            Revise/maintain ALSP requirements            Maintain and update LRFS (O&amp;MN PRL/                Requirements Determination (REDET)                and Aircraft Procurement Navy (APN)-5                requirements)            Review ILS Contract Requirements            Implement Post Production Support Plan            Maintain, track and resolve top Readiness                Degraders            Conduct user Readiness Reviews            Maintain and identify new candidates for                (ARI/TOC/CREI) items            Investigate/implement LECPs            Continue user interface reviews (ILS                Management Team (ILSMTs), ILS                Management Review (ILSMR), MELRs)            Maintain CM planning, ECP staffing, control                and tracking (Evolutionary Acq)                requirements            Maintain and update Configuration                Management Information System                (CMIS)            Manage Mod management (OSIPS/Rapid                Action Minor Engineering Changes                (RAMEC)/TD's /Mod teams)            Retrofit programs            Provide support requirements for Block                Upgrades                (BLK/SLEP/CILOP/Reproduction                (REPRO)            Evaluate PBL, Commercial Off-The-Shelf Item                (COTSI) opportunities            Support Equipment Tools and Test Fixtures                (ST/STE) requirements            Disposal (when required)            Storage (when required)            Demilitarization (when required)         </p>

**APML ROLES AND RESPONSIBILITIES (cont)****OPERATIONS AND SUPPORT****Maintenance Planning**

Sustained Maintenance Planning and Analysis  
Corrosion Program (O, I & D)  
RCM/Age Exploration (AE) based preventive maintenance program

**Support Equipment**

Participate in APN 7 SE requirements

**Supply Support**

Ensure spares LEM provides adequate replenishment parts, repair capability

**Technical Data**

Update technical manuals  
Ensure TPDR s resolved/answered  
Maintain Drawings  
Tech Bulletins

**Training/Trainers**

Ensure CM consistent with system configuration

**Computer Resources**

Sustain Naval Aviation Logistics Command  
Management Information System  
(NALCOMIS) Optimized Organizational  
Maintenance Activity (OOMA) database  
Maintain Automated Maintenance Environment  
(AME) requirements (Diagnostics, Ground  
station hardware and software)

**PHS&T**

Sustain requirements (funding, repairs and new requirements due to change activity)

**Facilities**

Address any new emerging requirements, Mods or refurbishment

**Manpower and Personnel**

Review impacts due to ECP's

**Design Interface**

Review impacts due to ECP's

## 1.0 PRODUCT SUPPORT MANAGEMENT PLANNING

**WHO-** PM, APML, IPTs

**WHAT – *Execution of the Acquisition Logistics Support Plan (ALSP)***

- Executing the planned support program that meets operational performance requirements and sustainment of systems in the most cost effective manner throughout the remaining life cycle of the system.
- The APML's primary planning document for program product support is, the ALSP.

**WHY –** Mandatory requirement

**WHEN –** Throughout the life cycle of the system

**WHERE –** NAVAIR, PM, IPTs, Fleet

**APML ROLE –**

- Responsible for overall program logistics support
- Logistics team lead for the supportability IPT (includes LMs, LEMs, Contractor Support (CS), Prime, Field activities)
- Responsible for ALSP development, approval, distribution and implementation the ALSP
- Responsible for overall logistics team program execution



**HOW** – See Appendix C Product Support Management Planning, Tab C-11 Acquisition Logistics Support Plan.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-14	Product Support Planning
-	C-17	Team Work Plan (TWP)
-	C-20	Post Production Support Plan (PPSP)
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirement and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
-	E-4	Procurement
-	E-5	Risk Management
G	-	Performance Based Logistics (PBL)
-	G-1	PBL
H	-	Maintenance Planning
-	H-8	Maintenance Plan (MP)
-	H-12	Supportability Planning and Analysis
J	-	Supply Support
-	J-1	Supply Support
K	-	Computer Resource Support (CRS)
-	K-1	Computer Resources
L	-	Facilities
-	L-1	Facilities
M	-	Support Equipment
-	M-1	Support Equipment Management
N	-	Packaging, Handling, Storage, and Transportation (PHS&T)
-	N-1	PHS&T
O	-	Manpower /Personnel
-	O-1	Manpower/Personnel
P	-	Training and Trainers
-	P-1	Training
Q	-	Design and Interface
-	Q-1	Design and Interface

## 1.1 Acquisition Logistics Support Plan (ALSP)

**WHO** – PM, APML, PMSE, IPTs

**WHAT** – To establish, document, and maintain program Acquisition Logistics Support.

An all encompassing plan that addresses all Product Support elements as required in support of a specific program. The ALSP serves as a guide to all managers on a program describing who, what, when, where and how much and the time frame window. An ALSP is a valid document for the life of the hardware.

**WHY** – The mere size of any support organization and the diverse and widely dispersed support sites require a comprehensive document that acts as a common guide for all to follow, applying a common requirement to system support regardless the location.

- The more specificity the acquisition logistics roadmap contains, the greater the chance of achieving the end result (i.e. full logistics support)
- An acquisition logistics roadmap should be in place prior to obtaining logistics certification for each applicable MDA review
- The ALSP in conjunction with the Logistics Requirements Funding Summary (LRFS) shall be used to verify and validate adequate logistics support funding

**WHEN** – Initially, Concept Exploration and Development Milestone A. Updated for each Milestone and throughout the program life cycle.

**WHERE** – NAVAIR (The ALSP is intended for use at Naval Air Systems Command (NAVAIRSYSCOM) level, the type commanders and selected wings. It is not intended for use at the operator level.)

**APML ROLE** – Ensure all support elements are addressed for fleet introduction and sustainment in acquisition logistics support documents for all assigned systems and equipment, ensuring support elements identified in the ALSP Guide are covered. See Tab C-11, reference and links.

**HOW** – See Appendix C Product Support Management Planning, TAB C-11 Acquisition Logistics Support Plan, and appendices and tabs as applicable.

## 1.2 Team Work Plan (TWP)

**WHO** – NAVAIR, PM, APML, IPTs

**WHAT** –

- The funding and execution document for an IPT
  - It ties money to specific tasks
  - lists hard products and/or services
- The means through which a program manager, using a task breakdown structure, secures an audit trail from the major system to the smallest product or service, and back up again
- The Team Work Plan (TWP) is the summation of the required tasks to produce the product and overall APML budget reflected in the Logistics Requirements Funding Summary (LRFS). The LRFS requirements are rolled up into the Program Managers TWP.

**WHY** –

- Intended to be the primary management tool used to organize, control and maintain accountability for technical work being performed on teams
- Documents a program team's resource requirements (e.g., personnel, depot/special facilities, test assets, etc.) and the level of commitment of each competency to supply those resources, as well as the level of funding to be provided by the PMA for direct funded resources.
- It will state the work to be done for funding assigned, replacing the AIRTASK and Work Unit Assignments (WUAs) which are used today.
- Contains detailed task descriptions in a "Task Breakdown Structure" for a three year period.
- The Task Breakdown Structure (TBS) is a variation on the WBS (refer to MIL-STD-881B, entitled "Work Breakdown Structures for Defense Materiel Items").
- The TBS is task-specific and more flexible than the WBS; it may be oriented to use any combination of product, site, function or appropriation, depending on the management needs of the team.
- The end product of the TBS will be the TWP, which will include all of the TBS tasks, task descriptions, and associated funding.

**WHEN** – IPT establishment, initiation, and / or Annual Review and update

**WHERE** – NAVAIR, PM, APML, FST, Prime Contractor

**APML ROLE –**

- Interface with program sponsor and initiate TWPs
- Review and or update for specific support requirements
- Validate and verify TWPs and LRFS for consistency
- Maintain tracking file for historical information

**HOW** – See Appendix C Product Support Management Planning, Tab C-17 Team Work Plan (TWP).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan
-	C-12	Product Support Organization
D	-	Planning, Programming, and Budgeting System
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy

### 1.3 Post Production Support Plan (PPSP)

**WHO** – PM, APML

**WHAT** – A plan that will provide program office and logistics support offices, management and technical information needed to assure continued attainment of readiness and supportability goals with the most economical support after production ceases.

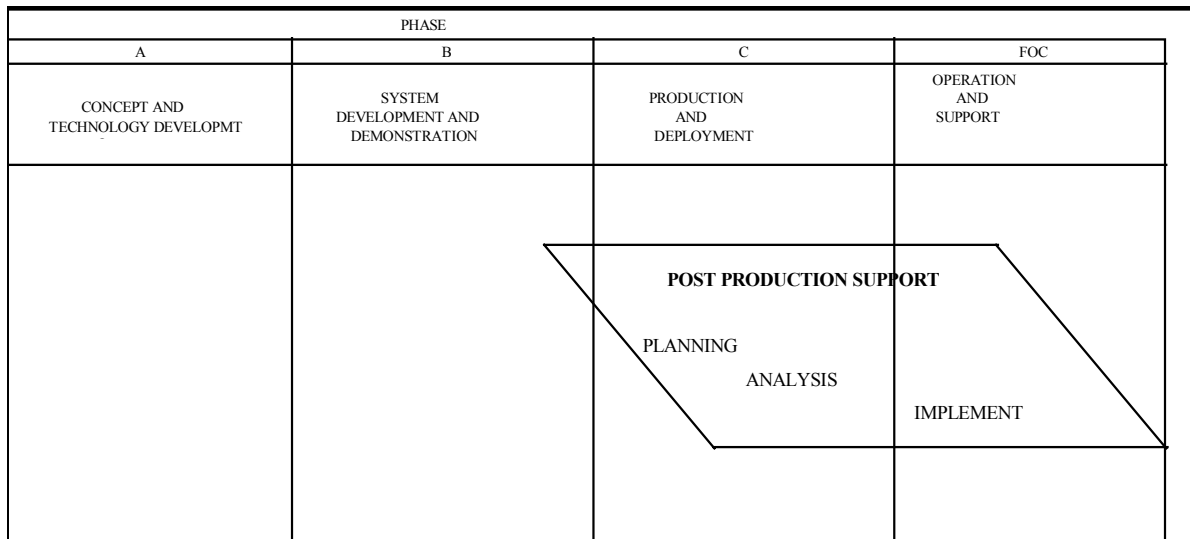


Figure 4.1.3-1

**WHY** – Programs ending production must plan to face new challenges such as:

- Equipment obsolescence and aging technology
- Diminishing manufacturing sources for spare parts and support equipment
- Production tool storage and disposition
- Loss of expertise at production end
- Diminishing appropriations to fielded systems vs. those in development
- Structural fatigue
- Component/parts wear-out
- Unique support requirements of foreign military sales customers

**WHEN** – Perform initial analysis in conjunction with the System Development and Demonstration Phase (old Program Definition and Risk Reduction (PDRR) - Phase I). PPS Planning is an iterative process and solutions can be considered early in the Systems Integration Phase (old Engineering, Manufacturing and Development (EMD) - Phase II) Planning is implemented during Production and Deployment Phase (old Production Fielding/Deployment and Operational Support (PF/D&OS) - Phase III) as shown in Figure 4.1.3-1.

**WHERE** – NAVAIR, PM, APML, IPTs, Prime Contractor

**APML ROLE** – Review, update and implement PPSP requirements.

**HOW** – See Appendix C Product Support Management Planning, Tab C-20 Post Production Support Planning (PPSP).

#### Appendices/Tabs For Additional Information As Applicable

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-2	Demilitarization and Disposal
-	C-3	Naval Aviation Readiness Integrated Improvement Program/Boots on the Ground (NAVRIIP/BOG)
-	C-4	Diminishing Manufacturing Sources and Material Shortages Program
-	C-11	Acquisition Logistics Support Plan (ALSP)
E	-	Acquisition Strategy
-	E-5	Risk Management
F	-	Configuration Management (CM)
-	F-1	CM
G	-	Performance Based Logistics (PBL)
-	G-1	PBL
H	-	Maintenance Planning
-	H-2	Component Tracking
-	H-3	Depot Determination
-	H-7	Integrated Maintenance Concept (IMC)
-	H-8	Maintenance Plan (MP)
-	H-10	Reliability Centered Maintenance (RCM)
J	-	Supply Support
-	J-2	Reclamation In Lieu Of Procurement/Stricken Aircraft Reclamation/Disposal Program (RILOP/SARDIP)
K	-	Computer Resource Support
-	K-3	Automated Maintenance Environment (AME)
L	-	Facilities
-	L-1	Facilities

## 1.4 Resource Planning = Logistics Requirement Funding Summary (LRFS)

**WHO** – APML, PM, BFM, IPTs

**WHAT** – A detailed accounting of requirements and funding that includes justification for the stated requirement

**WHY** –

- Ensures all requirements are identified and are presented in a consistent format as an official budget building block at the acquisition command level.
- Addresses all aspects of generating program support requirements.

**WHEN** – The initial LRFS should be constructed as an estimate during Milestone “A”. Updates should be as required and at least annually.

**WHERE** – NAVAIR

**APML ROLE:**

- Will develop the LRFS and or review requirements within the IPTs
- Incorporate, update and or Verify LRFS reflects all requirements and year to be accomplished, obligation and spend plans
- Initiate, process and track Procurement Initiation Documents (PIDs), and funding documents.

**HOW** – See Appendix D Planning, Programming, and Budgeting System, Tab D-5 Logistics Requirements Funding Summary (LRFS).

### Appendices/Tabs For Additional Information As Applicable

APPX	TAB	TITLE
D	-	Planning, Programming, and Budgeting System
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-3	Programming, Budgeting, Fiscal Accounting

## 2.0 PRODUCT SUPPORT EXECUTION

**WHO** – APML, PM, IPTs, Prime Contractor

**WHAT** –

- Executing plans and planning that has been done to build and sustain a support package
- Consistently and constantly staying current of the program condition
- Answering to functions and disciplines that need action or just adjustments to safely sustain the system

**WHY** – Ensures all aspects of planning, resources and management functions are being accomplished in support of the system to meet the needs of the customers including:

- Communication
- IPT interface
- Tasks initiated and completed
- Funding requirements initiated
- Reviews conducted
- Follow-up
- Metrics (processes and objectives)
- Continue the iterative process

**WHEN** – Continuous throughout the life cycle

**WHERE** – NAVAIR, Fleet, IPTs, Prime contractor



**APML ROLE** – Team leader, coach, mentor, facilitator

**HOW** – See Appendix C Product Support Management Planning, Tab C-11 Acquisition Logistics Support Plan.

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
B	-	Acquisition Documentation
-	B-4	Metrics
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-3	Naval Aviation Readiness Integrated Improvement Program/Boots on the Ground (NAVRIPP/BOG)
-	C-13	Product Support Performance Requirements
-	C-14	Product Support Planning
-	C-19	Status Monitoring
D	-	Planning, Programming, and Budgeting System
-	D-2	Budgeting and Execution
-	D-5	Logistics Requirements and Funding Summary (LRFS)

## 2.1 SUPPORT SYSTEM REVIEW & UPDATE

**WHO** – APML, FST, Fleet

**WHAT** –

- A systematic, consistent review of planned program requirements, user expectations, and metrics (includes projected accomplishments and processes). Primarily provided through the everyday performance of support functions (Naval Aviation Maintenance Discrepancy Reporting Program (NAMDRP) data) that provides success indicators focused on customer performance metrics such as readiness, sortie generation, mission success/completion rate, user satisfaction/feedback and the cost to support the system.
- The complete suite of review strategy and metrics chosen as indicators of program health should be dictated by the needs of the individual program. Metrics for the sake of metrics does not serve the support team or the Navy. The entire program team should be cognizant of what metrics are to be tracked and why. When choosing the metrics the first question that should be asked is, “why choose that one, what will be gained through the tracking of this particular data?” All data is expensive and some data may not prove to be cost effective to track.

**WHY** – Ensure planned events are accomplished and to rectify impediments early enough as to not disrupt program cost, schedule and performance master plans in meeting user needs.

**WHEN – Constantly!** All programs establish means and methods to track performance of systems and equipment from design testing to retirement. As production ends the need to understand what has been tracked and how the indicators were used to improve performance or reduce costs is imperative. Data collected from the initial Design Tests (DT) through the end of production should be used to predict the cost, manpower, material and data requirements necessary to sustain the support system for the remaining life of the system. Adequate planning to sustain the support system will be a large determinate in the level of success the team has in maintaining a safe operating system.

**WHERE** – NAVAIR, IPTs, FST, Fleet

**APML ROLE –**

- Establish primary support program review schedule, type, purpose, and audience intended for.
  - Mandatory: Milestone reviews, IOCSR, Program review and Fielded system review (preliminary development stage), PEO Executive/Portfolio Briefs, Logistics Manager Review (LMR) (for AIR-3.0 if requested, (presented by APML))
  - Internal: APML review, IPT, Logistics Element Manager (LEM)/ Logistics Manager (LM) reviews, PEO (L)
  - Fleet Focus: Readiness, ILSMT, ILSMR, MELR (all basically same 1-5 days depending on the program, chaired by the APML), Type Commander (TYCOM) review (annually or as requested)
  - APML meetings and interface with IPT ILS leads and members at APML's discretion
- Readiness Degradation identification, analysis and corrective action plans
- Ensure the sustained Maintenance Planning And Analysis efforts are accomplished

**HOW –** See Appendix C Product Support Management Planning, Tab C-11 Acquisition Logistics Support Plan (ALSP).

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-4	Metrics
C	-	Product Support Management Planning
-	C-1	Affordable Readiness
-	C-3	Naval Aviation Readiness Integrated Improvement Program/Boots on the Ground (NAVRIIP/BOG)
-	C-6	Independent Logistics Assessment (ILA)
-	C-7	Initial Operational Capability Supportability Review (IOCSR)
-	C-10	Product Support Evaluation
-	C-19	Status Monitoring
-	C-20	Post Production Support Plan (PPSP)
-	C-22	Operational Test Readiness
H	-	Maintenance Planning
-	H-2	Component Tracking
-	H-7	Integrated Maintenance Concept (IMC)

## 2.2 Storage/Weapons System Retirement

**WHO** – PM, APML, APMSE (Supporting Activities, the owning service or custodian.)

**WHAT** – When a decision is made to place systems in long term storage or when the system/equipment has reached the end of its useful life, planning is required to assure the most beneficial course of action is taken with regard to future use. Aircraft will be classified in general as follows:

**Category "A."** Aircraft authorized for sale and exchange for commercial use. This includes fixed wing and rotary wing aircraft which do not require Demilitarization (DEMIL) as defined by DoD 4160.21-M-1, and have been identified by the Military Semites as available for commercial sale or exchange.

**Category "B."** Aircraft used for ground instructional and static display purposes. These aircraft generally have not been maintained to airworthiness standards, precluding their use as a flyable aircraft.

**Category "C."** Aircraft that are combat configured as determined by the Services. Screening for future use will be performed by the owning service according to category. There is a priority for allocation

**WHY** – Prior to delivering the system or equipment to the appropriate agency for storage or disposal the program manager and his team must document and or take action ensure the system/equipment is in the desired configuration if operable. The documentation provided with the equipment/system must describe the actions to be taken to store or dispose.

**WHEN** – When directed by OPNAV and in coordination with the operating forces establish a stand down schedule that describes the number and frequency of transfers to the storing custodian or disposal activity.

**WHERE** – NAVAIR, TYCOM (level)

### APML ROLE –

- Assist PM with Developing plans to establish specific requirements such as; configuration, de-militarization, categorizing aircraft to "A", "B" or "C", and coordinating with the fleet for scheduling delivery and custody changes.
- Tailor a plan to the specific situation.

**HOW** – See Appendix C Product Support Management Planning, Tab C-2 Demilitarization and Disposal.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan
-	C-20	Post Production Support Plan (PPSP)
J	-	Supply Support
-	J-2	Reclamation In Lieu Of Procurement/Stricken Aircraft Reclamation/Disposal Program (RILOP/SARDIP)

## 2.3 Foreign Military Sales

**WHO** – PM, APML, APMSE, FMS, Product Support Team Coordinator (PSTL)

**WHAT – Background:** There are four organizations that play a major role in the establishment and management of an FMS program. The Navy International Programs Office (Navy IPO). Within the Office of the Secretary of the Navy, Navy IPO has the primary responsibility for the U.S. Navy's FMS Program. Navy IPO exercises overall direction, guidance, and control over these programs. Navy IPO also arranges for and manages the training of FMS customer military personnel in the United States and overseas. Navy IPO also prepares service-to-service implementing procedures for logistics support of naval weapons systems and equipment. The Navy's five systems commands (SYSCOMs) report directly to the Chief of Naval Operations.

The five systems commands are:

- Naval Air Systems Command (NAVAIRSYSCOM)
- Naval Sea Systems Command (NAVSEA)
- Space and Naval Warfare Systems Command (SPAWAR)
- Naval Facilities Engineering Command (NAVFAC)
- Naval Supply Systems Command (NAVSUP)

Each systems command is responsible for buying and supporting certain types of equipment and material. Each SYSCOM identifies specific equipment and material needs based on the overall requirements outlined by CNO. Each SYSCOM has a separate organization that runs the various programs that relate to material or services for which that SYSCOM is responsible. All of these organizations fall under the authority of the Navy IPO. NAVSUP has primary responsibility for running the U.S. Navy supply system. NAVSUP develops and implements supply policies and procedures. These policies and procedures are designed to meet CNO requirements and objectives and to assist in the management of U.S. Navy material.

**For NAVAIR:** FMS or Security Assistance Programs are staffed using the same basic staffing plan as domestic programs with fewer people. There is a Program Manager assigned and he staffs the functions to address engineering and logistics functions that apply to the support of the system/equipment. The engineers assigned fulfill the Class Desk Function and the logistics managers fulfill the APMLs role.

Following the Program Managers direction and guidance the logistics manager assigned coordinates the development of a support package necessary for maintenance and support with the FMS customer. The support package is usually negotiated with the customer to fit their needs and anticipated usage of the weapons system/equipment they are procuring. The package has to be developed and approved through the NAVAIRSYSCOM to the Navy International Programs Office.

**WHEN** – Upon U.S. Navy approval and Case implementation.

**WHERE** – NAVAIR HQ

**APML ROLE –**

Coordinate FMS interests with FMS PSTL  
Obtain specific FMS manager if required

**HOW** – See Appendix B Acquisition Documentation, Tab B-3 Foreign Military Sales (FMS).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy

### 3.0 CONFIGURATION MANAGEMENT

**WHO** - PM, APML, APMSE, IPTs, FST, Fleet, Prime Contractor

**WHAT** – A formal discipline of program management that integrates and applies technical and administrative actions necessary to identify, document, validate and verify, control, report and record the functional and physical characteristics of a product or item throughout its life cycle. (Naval Aviation Configuration Management Expertise Development (NACMED II))

“Configuration Management is the process for establishing and maintaining consistency of a product’s performance, functional and physical attributes with its requirements, design and operational information throughout its life”.

**WHY** - DOD Regulation 5000.2-R Interim Guidebook, states the requirement for a configuration management process to control the system products, processes and related documentation. The configuration management effort includes identifying, documenting and verifying the functional and physical characteristics of an item; recording the configuration of an item; and controlling changes to an item and its documentation. It shall provide a complete audit trail of decisions and design modifications.”

**WHEN** - CM is a requirement in each phase of the MDAP life cycle.

**WHERE** – NAVAIR, Fleet, PM, Prime Contractors

#### **APML ROLE –**

- Ensure the product support elements for the weapon system reflect and support the configuration baseline and changes that occur over the evolutionary life of the program.
- Ensure Program Manager’s CM Planning includes product support requirements, change planning and implementation, review, approval and tracking and control, including upgrades, mods, block upgrades planned or in progress.
- Budgets: APN-5 Install dollars
- Resources, Mod Teams, Kit Requirements
- Interface Device (ID) changes in process & staffing
- Identify, review, track TDs for approval and incorporation
- Awareness of OOMA and CMIS requirements (Refer to Tabs below)



**HOW** - See Appendix F Configuration Management, Tab F-1 Configuration Management (CM).

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B	-	Acquisition Documentation
-	B-1	Commercial off the Shelf/Non-Developmental Item (COTS/NDI)
C	-	Product Support Management Planning
-	C-3	Naval Aviation Readiness Integrated Improvement Program/Boots on the Ground (NAVRIIP/BOG)
-	C-4	Diminishing Manufacturing Sources and Material Shortages Program
-	C-8	Naval Aviation Maintenance Program (NAMP)
-	C-19	Status Monitoring
D	-	Planning, Programming and Budgeting System
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
F	-	Configuration Management
-	F-2	Configuration Management Information System (CMIS)
G	-	Performance Based Logistics (PBL)
-	G-1	PBL
H	-	Maintenance Planning
-	H-4	Design Change Notices (DCN)

**REF** – MIL-HDBK-61

### 3.1 Configuration Management Plan

**WHO** – PM, APML, APMSE, IPTs, Fleet, Prime Contractor

**WHAT** – Review and update of the program CM Plan that provides guidance to the consistent application of CM across multiple integrated process product development teams. It can include contractor activity evaluation, specific experiences and lessons learned.

- Main elements of a CM Plan include:
  - Principles and Concepts
  - Government Plan
  - Contractor Plan
  - Activities Guide

**WHY** – To ensure all CM planning reflects updated supportability requirements including, enhancement, schedules, actions and agreements that effect the activity during the O&S phase, including interface agreements, Memorandum Of Understanding (MOUs), system development, process documentation, operating procedures and training.

**WHEN** - Prior to or early following transition to the O&S phase.

**WHERE** – NAVAIR, PM, Fleet, Prime Contractor

**APML ROLE –**

- Influence plan to ensure critical support elements are considered for all configuration planning, processes and decisions
- Review CM Plan for changes required to fully implement planned and future changes.
- Provide Point Of Contact (POC) or IPT member as the CM representative for the program
- Attend meetings

**HOW** - See Appendix F Configuration Management (CM), Tab F-1 Configuration Management (CM).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-11	Acquisition Logistics Support Plan (ALSP)
D	-	Planning, Programming, and budgeting system
-	D-1	Appropriations
-	D-2	Budgeting and Execution
-	D-3	Programming, Budgeting, Fiscal Accounting
-	D-5	Logistics Requirements and Funding Summary (LRFS)
E	-	Acquisition Strategy
-	E-1	Acquisition Strategy
F	-	Configuration Management (CM)
-	F-2	Configuration Management Information System (CMIS)

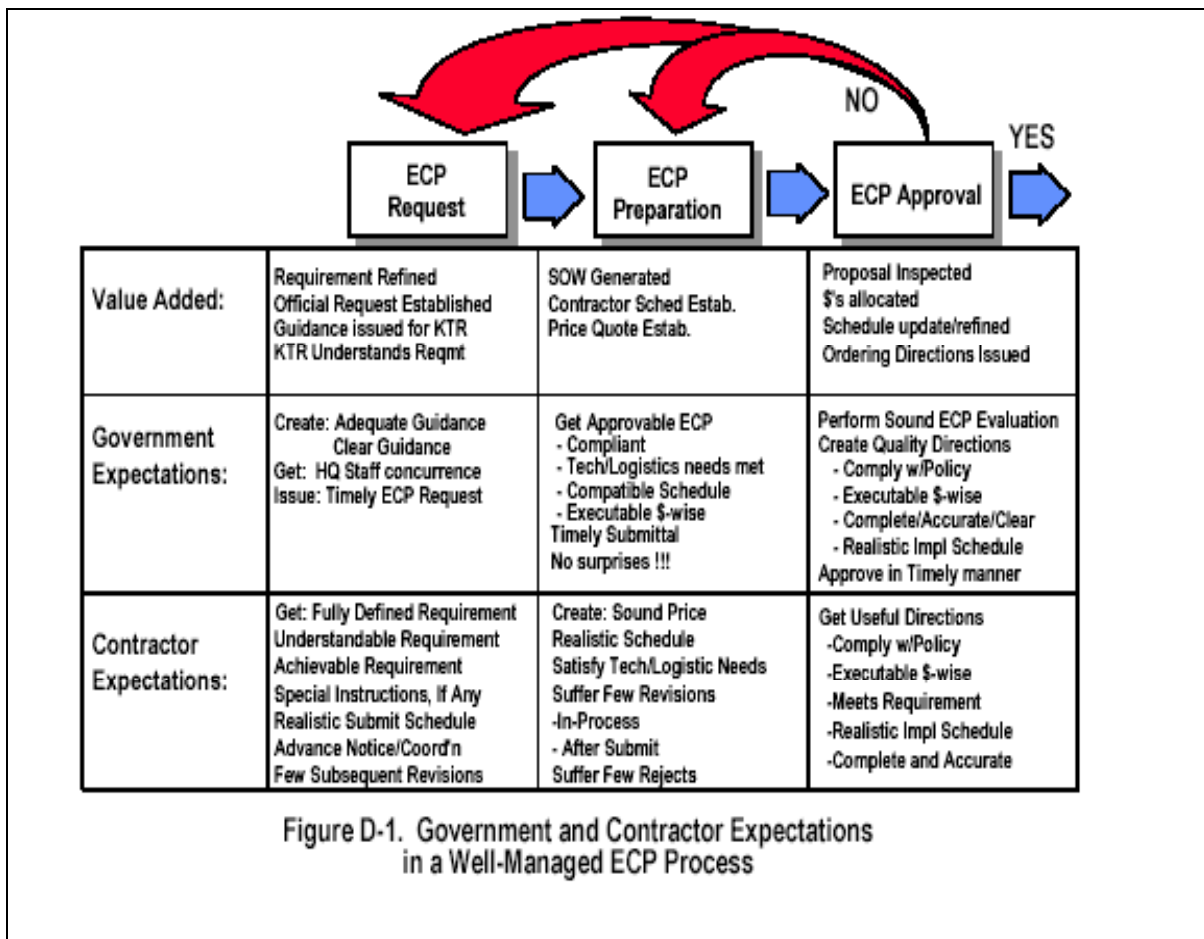
### 3.2 Engineering Change Management

**WHO** – PM, APML, APMSE, FST, Prime Contractor

**WHAT** – A process that will ensure timely approval and cost effective implementation of engineering proposals.

**WHY** – Time is money! Unnecessary delays in processing an ECP will lead to increased operating costs, increased supply costs and increased labor costs and more.

**WHEN** – When the decision is made to request an ECP. The program team should include their processing expectations with the decision memorandum that includes a schedule/Plan Of Action & Milestones (POA&M) detailing each event milestone.



ECP development requires close coordination between Government and contractor processes. ECP cycle times and rework have been dramatically reduced where an Integrated Data Environment (IDE), Government/contractor Integrated Process Teams (IPTs) and Single Process Initiatives (SPI) have been employed. For maximum effectiveness, IPT meetings should be well planned, highly structured and held frequently enough to ensure exchange of useful information. Use of Video Tele-Conference (VTC) facilities or on-line review and approval through automated ECP software, vice personnel travel, are encouraged whenever possible to maximize attendance and minimize costs. Such measures can reduce both the time and costs required for ECP preparation and approval.

**WHERE** – NAVAIR, PM, Fleet, Prime Contractors

### **APML ROLE –**

- Logistics chair for the PMA Configuration Review Board (CRB)
- Key interface with APMSE, IPTs on changes required and support implications
- Leads the support LEMs, FST and any other element charged with support functions, in reviewing and addressing the logistics needs in supporting the implementation and long term system support following the implementation and installation of the change
- Responsible for the implementation of any approved changed
- Releases Modification Program Implementation Letter (MODPIL), a letter to the cognizant team members assigning the actions required by all to successfully implement an Engineering Change.
- Ensure that CM reviews are conducted to status and update all change activity

**HOW** – See Appendix F Configuration Management (CM), Tab F-1 Configuration Management (CM).

### **Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-5	Fleet Support Team (FST)
-	C-12	Product Support Organization
-	C-17	Team Work Plan (TWP)
E	-	Acquisition Strategy
-	E-4	Procurement
F	-	CM
-	F-2	Configuration Management Information System (CMIS)
H	-	Maintenance Planning
-	H-4	Design Change Notices (DCN)
-	H-8	Maintenance Plan (MP)
-	H-14	Work Unit Code (WUC)

### 3.3 Technical Directive Management

**WHO** – NAVAIR, PM, APML, APMSE, IPTs, FST, NAVICP, Prime Contractor

**WHAT** - TD's are documents issued by the Naval Air Systems Command to provide technical information necessary to properly and systematically inspect or alter the configuration of aircraft, engines, systems, weapons or equipment.

The primary elements of TD management include:

- Responsibilities
- Requirements and Procedures
- Status Accounting
- TD Modification Material Management

**WHY** - To ensure naval aircraft and associated equipment are maintained in a configuration that is safe and provides the best value to the user.

**WHEN** - Continuously throughout the life of the program.

**WHERE** - NAVAIR, PM, FST, TYCOM, NAVICP, Prime Contractor

#### **APML ROLE –**

- Interface with IPTs and NAVAIR competency teams (Air 1.0, AIR 3.1.8), Central kitting Activity, and NATEC
- Responsible for planning and managing implementation of TD's for assigned aircraft/systems
- Coordination
- Verification
- Compliance
- Delivery of associated logistics support
- Status monitoring for the following should be accomplished:
  - Technical Directive Status Accounting (TDSA)
  - Track TD Review & Approval
  - Track Interim TD formalization by recission date
  - Track active TDs for Incorporation & completion

**HOW** - See Appendix F Configuration Management (CM), Tab F-1 Configuration Management (CM).

**Appendices/Tabs For Additional Information As Applicable**

<b>APPX</b>	<b>TAB</b>	<b>TITLE</b>
C	-	Product Support Management Planning
-	C-5	Fleet Support Team (FST)
-	C-8	Naval Aviation Maintenance Program (NAMP)
-	C-9	Naval Ordinance Maintenance Management Program (NOMMP)
-	C-11	Acquisition Logistics Support Plan (ALSP)
-	C-14	Product Support Planning
-	C-19	Status Monitoring
F		Configuration Management (CM)
	F-2	Configuration Management Information System (CMIS)
	F-3	Technical Directive's (TD's) – Bulletins – Red Stripe
I		Technical Data
	I-1	Technical Data
K		Computer Resource Support
	K-4	NALCOMIS Optimized Organizational Maintenance Activity (OOMA)

### 3.4 Operational Safety Improvement Program (OSIP)

**WHO** – OPNAV, NAVAIR, PM

**WHAT** – Operational Safety Improvement Program (OSIP)

- Planning and execution of a modification program that includes improvements in safety, performance, and service life extension and modernization programs for the system program. The two primary parts are:
  1. The budget exhibit P-3a
  2. The Basis for Cost Estimate (BFCE)
- Specific budgetary planning document used by the Navy to justify a weapon system modification.
- The means by which retrofit modifications are planned and budgeted

**WHY** - The approved OSIP is the primary justification document for planning, budgeting and executing retrofit modifications to fielded aircraft.

**WHEN** –

- Operational requirements to satisfy, correct, improve aircraft are necessary to maintain safety, mission, survivability and reliability operational suitability and effectiveness.
- Upon receipt of NAVAIR comptroller and CNO (OPNAV) guidance for the current OSIP submission.

**WHERE** – OPNAV, NAVAIR, PM

**APML ROLE** –

- Assists the PMA in OSIP development.
- Ensures all product support requirements necessary for support, management and implementation of the modification are identified and planned including, PSMP, production engineering support, install manhours and labor.
- Coordinates OSIP product support element/IPT input, including AIR-6.0, OPNAV and AIR-3.1 final concurrence prior to submission.
- Review OSIP plan for ECP implementation and subsequent modification program:



**HOW** - See Appendix F Configuration Management (CM), Tab F-1 Configuration Management.

**Appendices/Tabs For Additional Information As Applicable**

APPX	TAB	TITLE
B		Acquisition Documentation
	B-1	Commercial Off the Shelf/Non-Developmental Item (COTS/NDI)
C		Product Support Management Planning
	C-5	Fleet Support Team (FST)
	C-11	Acquisition Logistics Support Plan (ALSP)
D		Planning, Programming, and Budgeting System
	D-1	Appropriations
	D-2	Budgeting and Execution
	D-3	Programming, Budgeting, Fiscal Accounting
	D-5	Logistics Requirements Funding Summary (LRFS)
E		Acquisition Strategy
	E-1	Acquisition Strategy
G		Performance Based Logistics (PBL)
	G-1	PBL
H		Maintenance Planning
	H-8	Maintenance Plan (MP)
J		Supply Support
	J-1	Supply Support

# **Appendix A**

## **ACRONYMS**

**A**

3-M	Material and Maintenance Management
5M	Manpower, Materials, Machinery, Methods and Measurement
A <sub>i</sub>	Inherent Availability
A <sub>o</sub>	Operational Availability
AA	Affordability Assessment
AAW	Army Acquisition Workforce
ABC	Activity Based Costing
ABDR	Aircraft Battle Damage Repair
ABL	Allocated Baseline
ABM	Acquisition and Business Management
ACAT	Acquisition Category
ACD	Allocated Configuration Documentation
ACO	Administrative Contracting Officer
ACR-F	Allowance Change Request Fixed
ACTD	Advanced Concept Technology Demonstration
ACWP	Actual Cost of Work Performed
ADL	Advanced Distributed Learning
ADM	Acquisition Decision Memorandum
ADR	Aircraft Damage Repair
ADR	Assessed Defect Rate
AE	Age Exploration
AEL	Allowance Equipage List
AEMS	Aircraft Engine Management System
AERMIP	Aircraft Equipment R&M Improvement Program
AESR	Aeronautical Equipment Service Record
AFMC	Air Force Material Command
AFR	Affordable Readiness
AFMB	Airframes Management Board
AG	Activity Group
AIDC	Automatic Identification Data Collection
AIMD	Aircraft Intermediate Maintenance Department
AIS	Automated Information System
ALH	Acquisition Logistics Handbook
ALRE	Aircraft Launch and Recovery
ALS	Acquisition Logistics Support (Replaces the term ILS)

ALSP	ALS Plan
AM	Acquisition Manager
AMARC	Aerospace Maintenance And Regeneration Center
AMD	Average Monthly Demand
AME	Automated Maintenance Environment
AMMRL	Aircraft Maintenance Material Readiness List
AMSR	Aviation Maintenance Supply Readiness
ANSI	American National Standards Institute
AOA	Analysis of Alternatives
AP	Acquisition Plan
APB	Acquisition Program Baseline
APEO	Air Program Executive Office
APL	Allowance Parts List
APM	Acquisition Program Manager
APML	Assistant Program Manager For Logistics
APMSE	Assistant Program Manager Systems, Engineering
APN	Aircraft Procurement, Navy
APPN	Appropriation
AQRC	AVCAL Quality Review Conference
AR	Aircraft Readiness
ARI	Aircraft Readiness Initiative
ARM	Aircraft Readiness Model
ARR	Allowance Requirements Register
AS	Acquisition Strategy
ASD (C <sup>3</sup> I)	Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
ASN (RDA)	Assistant Secretary of The Navy (Research, Development and Acquisition)
ASPA	Air Craft Service Period Adjustment
ASPO	Avionic System Project Officer
ASR	Alternate Systems Review
ASR	Assembly Service Record
ASR	Acquisition Strategy Report
ASW	Antisubmarine Warfare
AT	Automatic Testing
AT&L	Acquisition Technology & Logistics

ATD	Advanced Technology Demonstration
ATDR	Aeronautical Technical Directive Requirements
ATE	Automated Test Equipment
ATL	Acquisition, Technology and Logistics
ATS	Automatic Test System
AUTOSERD	Automated Support Equipment Recommendation Data
AVCAL	Aviation Consolidated Allowance List
AVDLR	Aviation Depot Level Repairable

**B**

BAs	Budget Activities
BAM	Baseline Assessment Memorandum
BCM	Beyond Capability Maintenance
BCS	Baseline Comparison System
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
BES	Budget Estimate Submission
BFCE	Basic For Cost Estimate
BFM	Business Financial Manager
BGSIT	Battle Group Systems Interoperability Test
BIS	Board of Inspection and Survey
BIT	Built-In Test
BITE	Built-In Test Equipment
BLK	Block
BLRIP	Beyond Low Rate Initial Production
BOA	Basic Ordering Agreement
BOD	Beneficial Occupancy Date
BOG	Boots on the Ground
BOM	Bill of Material

**C**

C <sup>3</sup>	Command, Control, and Communications
C <sup>4</sup> I	Command, Control, Communications, Computers, and Intelligence
CAD	Component Advanced Development
CAD	Computer-Aided Design
CAD2	Computer-Aided Design, Second Acquisition
CAE	Computer-Aided Engineering

CAE	Component Acquisition Executive
CAGE	Commercial And Government Entity
CAIG	Cost Analysis Improvement Group
CAIV	Cost As an Independent Variable
CALS	Continuous Acquisition and Life-Cycle Support
CALSTD	Calibration Standard
CAM	Computer-Aided Manufacturing
CAM	Component Analysis Model
CaNDI	Commercial and Non-Development Item
CARD	Cost Analysis Requirements Description
CAS	Contract Administrative Services
CASA	Cost Analysis Strategy Assessment
CASEE	Comprehensive Aircraft Support Effectiveness Evaluation
CASS	Consolidated Automated Support System
CAVTS	Cost Adjustment and Visibility Tracking System
CBD	Commerce Business Daily
CBM	Condition Based Maintenance
CBS	Cost Element Breakdown Structures
CBS	COTs-Based System
CCA	Clinger-Cohen Act
CCB	Configuration Control Board
CCITT	Consultive Committee International Telephony and Telegraph
CD-ROM	Compact Disk Read-Only Memory
CDM	Configuration Data Manager
CDR	Contract Design Report
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CDU/EICAS	Control Display Unit/Engine Instrument Crew Alerting System
CE	Concept Exploration
CE	Collateral Equipment
CEB	Congressional Evaluation Board
CEG	Cost Estimating Group
CER	Cost Estimating Relationship
CETS	Contractor Engineering Technical Services
CFE	Contractor-Furnished Equipment
CFSR	Contract Funds Status Report

CFT	Cross Functional Team
CHPT	Cherry Point
CI	Configuration Item
CICA	Competition in Contracting Act
CINC	Commander In Chief
CILOP	Conversion In Lieu Of Procurement
CIO	Chief Information Officer
CIP	Component Improvement Program
CITIS	Contractor Integrated Technical Information Service
CJCS	Chairman Joint Chief of Staff
CKA	Central Kitting Activity
CLI	Contract Line Item
CLIP	Configuration Logistics Information Program
CLS	Commercial Logistic Support
CM	Configuration Management
CM	Corrective Maintenance
CMC	Commandant, Marine Corps
CMIS	Configuration Management Information System
CMP	Configuration Management Plan
CMPRT	Configuration Management Review Team
CMRS	Calibration Measurements Requirements Summary
CMS	Contractor Maintenance Services (Part of ETS)
CMSC	Contract Management Service Center
CNET	Commander Naval Education and Training
CNO	Chief of Naval Operations
COMNAVAIR	Commander Naval Air Systems Command
COMOPTEVFOR	Commander, Operational Test and Evaluation Force
COMS	Contractor Operations and Maintenance of Simulators
COMTRAK	Component Tracking
CONUS	Continental United States
COOOSE	Cost Of Ownership Of Support Equipment
COP	Community of Practice
COR	Contracting Officer's Representative
CORE	Cost Oriented Resources Estimating
COSAL	Coordinated Shipboard Allowance List
COSBAL	Coordinated Shore-Based Allowance List

COSIS	Care Of Supplies-In-Storage
COSSI	Commercial Operating & Support Savings Initiative
COTS	Commercial Off-The-Shelf
COTSI	Commercial Off-The-Shelf Item
CPI	Critical Program Information
CPIN	Computer Program Identified Number
CPM	Critical Path Method
CPR	Cost Performance Report
CPTP	Computer Program Test Plan
CPTPs	Computer Program Test Procedures
CPTsS	Computer Test Specifications
CRB	Configuration Review Board
CRD	Capstone Requirements Document
CRD	Certified, Ready for Design
CR&EI	Cost Reduction & Effectiveness Improvement
CREI	Cost Reduction Improvement Initiatives
CRISDs	Computer Resources Integrated Support Documents
CRLCMP	Computer Resources Life-Cycle Management Plan
CRS	Computer Resources Support
CRWG	Computer Resources Working Group
C/SSR	Cost/Schedule Status Report
CS	Contractor Support
CSA	Configuration Status Accounting
CSCI	Computer Software Configuration Item
CSE	Common Support Equipment
CSEC	Communication Security
CSI	Critical Safety Items
CSI	Contractor Simulation Instruction
CV	Aircraft Carrier

**D**

D	Depot (Maintenance Level)
D/OT&E	Developmental and Operational Test and Evaluation
D&D	Demilitarization and Disposal
DA	Development Authority
DA	Defense Authority



DAB	Defense Acquisition Board
DAD	Defense Acquisition Deskbook
DAE	Defense Acquisition Executive
DAES	Defense Acquisition Executive Summary
DAPML	Deputy Assistant Program Manager for Logistics
DAPSO	Defense Automated Publishing Services Office
DAPWG	Defense Acquisition Policy Working Group
DBDDs	Data Base Design Documents
DCM	Defense Contract Management
DCMO	Defense contract Management Office
DCN	Design Change Notice
DCNO	Deputy Chief of Naval Operations
DCNO (RWR&A)	Deputy CNO (Resources, Warfare Requirements, and Assessments)
DEM/VAL	Demonstration and Validation
DEMIL	Demilitarization
DEU	Display Electronics Unit
DFAR	Defense Federal Acquisition Regulation
DFARS	Defense Federal Acquisition Regulation Supplement
DI	Design Interface
DIA	Defense Intelligence Agency
DID	Data Item Description
DII-COE	Defense Information Infrastructure Common Operating Environment
DL	Depot Level
DLA	Defense Logistics Agency
DLIS	Defense Logistics Information Services
DLR	Depot Level Repairable
DLSC	Defense Logistics Services Center
DM	Decision Memorandum
DMS	Digital Map System
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DoN	Department of the Navy
DOT&E	Director, Operational Test and Evaluation

DOTLP	Doctrine, Organization, Training, Leadership and Personnel
DPAS	Defense Priorities and Allocation System
DPG	Defense Planning Guidance
DPRB	Defense Planning Resources Board
DR	Decision Review
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DRP	Design Review Package
DRPM	Direct Reporting Program Manager
DSMC	Defense Systems Management College
DT	Design Test
DT	Development Testing
DT&E	Development Test and Evaluation
DT/OT	Developmental and Operational Testing
DTC	Design to Cost
DTLCC	Design to Life Cycle Cost
DTUPC	Design to Unit Production Cost
DUAP	Dual Use Program
DUP	Dual Use Program
DVD	Direct Vendor Delivery
DWCF	Defense Working Capital Fund

**E**

E&MD	Engineering and Manufacturing Development
EA	Electronic Attack
EC	Engineering Change
EC	Electronic Commerce
EC	Essentiality Code
ECM	Electronic Counter Measures
ECOMTRACK	Engine Component Tracking Program
ECP	Engineering Change Proposal
ECU	Electrical Control Unit
EDM	Engineering Development Model
EFR	Equipment Facility Requirement
EHR	Equipment History Record
EI	Engineering Investigations

EIA	Electronic Industries Alliance
EMD	Engineering, Manufacturing and Development
EO	Executive Order
EOA	Early Operational Assessment
EOB	Equipment On Board
EOC	Equipment Operational Capability
ERP	Enterprise Resource Planning
ESH	Environmental, Safety, Health
ESOH	Environment, Safety & Occupational Health
ET	Enterprise Team
ETR	Engine Transaction Report
ETS	Engineering and Technical Services
EVM	Earned Value Management
EVMIG	Earned Value Implementation Guide
EVMS	Earned Value Management Systems
EW	Electronic Warfare

**F**

F3I	Form-Fit-Function-Interface
F	Facilities (FAC)
F	Fighter (Aircraft)
FA	False Alarm
FA	Field Activity
FA	Functional Analysis
FAC	Facilities
FALSC	Fleet Aviation Logistics Support Center
FAR	Federal Acquisition Regulation
FARA	Federal Acquisition Reform Act
FAT	First Article Test
FBL	Functional Baseline
FBM	Fleet Ballistic Missile
FCA	Functional Configuration Audit
FCA	Field Calibration Activity
FCC	Flight Control Computer
FCD	Functional Configuration Documentation
FD	Fault Detection

FD/P	Fault Detection/
FDM	Fixed Depot Maintenance
FFP	Firm Fixed Price
FHP	Flying Hour Program
FI	Fault Isolation
FIP	Federal Information Processing
FIR	Flight Incident Recorder
FIT	Fleet Introduction Team
FLIR	Forward Looking Infrared
FLR	Field Level Repairable
FMC	Full Mission Capable
FMEA	Failure Modes and Effects Analysis
FMECA-MI	Failure Modules and Effects Criticality Analysis - Maintainability Information
FMP	Facilities Modernization Plan
FMP	Fleet Modernization Program
FMP	Facilities Management Plan
FMS	Foreign Military Sales
FOC	Full Operational Capability
FOMM	Functionally Oriented Maintenance Manuals
FOT&E	Follow-On Test and Evaluation
FPI	Fixed Price Incentive
FPT	Fleet Project Team
FRACAS	Failure Reporting, Analysis, and Corrective Action
FRP	Full-Rate Production
FRPDR	Full-Rate Production Decision Review
FRD	Facilities Requirements Document
FRR	Flight Readiness Review
FS	Flexible Sustainment
FSE	Fleet Supportability Evaluation
FST	Fleet Support Team
FY	Fiscal Year
FYDP	Future Years Defense Program

**G**

GANTT	
GCCS	Global Command and Control System
GCO	Government Concept of Operations
GFE	Government-Furnished Equipment
GIDEP	Government Industry Data Exchange Program
GOTS	Government Off-The-Shelf (Obsolete, see CaNDI)
GPETE	General Purpose Electronic Test Equipment
GPSE	General Purpose Support Equipment (Obsolete, see CSE)
GS	General Schedule (Civil Service employee classification)
GSA	General Services Administration
GUI	Graphical User Interface

**H**

HAZMAT	Hazardous Material
HDBK	Handbook
HERO	Hazard of Electromagnetic Radiation to Ordnance
HFE	Human Factors Engineering
HM&E	Hull, Mechanical and Electrical
HMC&M	Hazardous Material Control and Management
HMMP	Hazard Material Management Plan
HMR	Hazardous Material Report
HMU	Hvdro Mech Control Unit
HNSC	House National Security Committee
HOL	Higher Order Language
HONA	Health of Naval Aviation
HQMC	Head Quarters Marine Corp
HSC	Hierarchical Structural Code
HSE	Health & Safety Executive Officer
HSI	Human Systems Integration
HVAC	Heating, Ventilation and Air Conditioning

## I

I	Intermediate (maintenance level)
IAW	In Accordance With
IBR	Integrated Baseline Review
ICA	Industrial Capability Assessment
ICDs	Interface Control Documents
ICE	Independent Cost Estimate
ICP	Inventory Control Point
ICRL	Individual Component Repair List
ID	Interface Device
IDE	Integrated Data Environment
IDE	Integrated Digital Environment
IDP	Individual Development Plan
IDP	Installation Data Package
IDTC	Inter-Deployment Training Cycle
IEM	Initial Estimate of Manpower
IETM	Interactive Electronic Technical Manual
ILA	Independent Logistics Assessment
ILS	Integrated Logistics Support
ILSAM	Integrated Logistics Support Acquisition Manual
ILSDS	ILS Detail Specification
ILSMR	ILS Management Review
ILSMT	ILS Management Team
ILSP	ILS Plan
IMA	Intermediate Maintenance Activity
IMC	Integrated Maintenance Concept
IMI	Interactive Multimedia Instructions
IMMRL	Individual Maintenance Material Readiness List
INC	Incorporate
IOC	Initial Operational Capability
IOCSR	Initial Operational Capability Supportability Review
IOL	Initial Outfitting List
IOT&E	Initial Operational Test & Evaluation
IPL	Integrated Priority List
IPMB	Industrial Program Management Board
IPO	International Program Office

IPPD	Integrated Product and Process Development
IPR	Interim Progress Review
IPR	In-progress Review
IPT	Integrated Product Team
IS	Information System
ISD	Instructional System Development
ISE&L	In-Service Engineering and Logistics
ISIL	Interim Support Items List
ISL	Initial Spares List
ISOR	Industrial Source of Repair
ISP	Initial Support Package
ISP	Integrated Support Plan
ISS	Initial Supply Support
IT	Information Technology
IWSDB	Integrated Weapons System Data Base

## J

J&A	Justification and Approval
JADTI	Joint Aviation Technical Data Integration
JAX	Jacksonville
JBD	Jet Blast Detector
JCF	Justification Cost Form
JCN	Job Control Number
JOA	Joint Operational Architecture
JOLT	Joint Operations and Logistics Tool
JORD	Joint Operational Requirements Documents
JROC	Joint Requirements Oversight Council
JTA	Joint Technical Architecture

## K

KIN	Kit Identification Number
KITMIS	Kit Management Information System
KMS	Knowledge Management System
KPPs	Key Performance Parameters

**L**

LAN	Local Area Network
LAMS	Local Asset Management System
LCC	Life Cycle Cost
LCCM	Life Cycle Cost Management
LCCP	Life Cycle Cost Procurement
LCOM	Logistics Composite Model
LECPs	Logistics Engineering Change Proposals
LEM	Logistic Element Manager
LFT&E	Live Fire Test and Evaluation
LM	Logistics Manager
LMDSS	Logistics Management Decision Support System
LMI	Logistics Management Information
LMR	Logistics Manager Review
LOGPARS	Logistic Planning and Requirements System
LOR	Level of Repair
LORA	Level of Repair Analysis
LOT	Life of Type
LRFS	Logistics Requirements and Funding Summary
LRGT	Logistics Requirements Generation Team
LRIP	Low-Rate Initial Production
LRIP	Logistics Readiness Improvement Program
LRU	Line Repairable Unit (Ship systems and Marine Corps ground equipment)
LRU	Lowest Repairable Unit (SPAWAR equipment)
LSA	Logistic Support Analysis
LSAR	LSA Record
LSC	Logistics Support Cost
LUI	Life Usage Indexes

**M**

M	Maintainability
M	Maintenance
M&P	Manpower and Personnel
M&S	Modeling and Simulation
MAA	Mission Area Analysis



MAAGS	Military Assistance Advisory Groups
MAF	Maintenance Action Form
MAIS	Major Automated Information System
MAISRC	Major Automated Information Systems Review Council
MAM	Maintenance Assistance Module
MAPP	Master Acquisition Program Plan
MARCORSYSCOM	Marine Corps System Command
MASINT	Mapping Agency Standard
MAT	Mission Area Team
MATT	Multi-mission Advanced Tactical Terminal
MC	Marine Corps
MC	Mission Capable
MCCDC	Marine Corps Combat Development Command
MCCR	Mission-Critical Computer Resources
MCLB	Marine Corps Logistics Base
MCMT	Mean Corrective Maintenance Time
MCN	Military Construction Navy
MCOTEA	Marine Corps Operational Test and Evaluation Activity
MDA	Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MDPS	Maintenance Data Processing System
MDS	Maintenance Data System
MEARS	Multi-User Automated Review System
MELR	Maintenance Engineering Logistics Review
MER	Manpower Estimate Report
MESL	Mission Essential Subsystem List
MESM	Mission Essential Subsystem Matrix
METCAL	Meteorological Calibration
MFHBA	Mean Flight Hours Between Abort
MFHBF	Mean Flight Hours Between Failure
MFHBUM	Mean Flight Hours Between Unscheduled Maintenance
MFP	Materiel Fielding Plan
MHE	Materials Handling Equipment
MI	Modification Instructions
MIF	Master Item File
MIL	Military

MIL-HDBK	Military Handbook
MIL-STD	Military Standard
MILCON	Military Construction
MILPERS	Military Personnel
MILSPEC	Military Specifications
MIPS	Modified Integrated Program Summary
MIS	Management Information System
MLDT	Mean Logistics Delay Time
MMH/CANNS	Maintenance Man-Hours/Cannibalization
MMH/FH	Maintenance Man-Hours Per Flight Hour
MMR	Multi-Mode Radar
MNA	Mission Need Analysis
MNS	Mission Need Statement
MODMIS	Modification Management Information System
MODPIL	Modification Program Implementation Letter
MOE	Measure of Effectiveness
MOS	Military Occupational Specialty
MOTT	Multi-service Operational Test Team
MOTS	Military Off-The-Shelf
MOU	Memorandum of Understanding
MP	Maintenance Planning
MP	Maintenance Plan
MPT	Manpower, Personnel, and Training
MPTRRD	Manpower, Personnel, and Training Resources Requirements Document
MR	Mission Reliability
MR	Maintenance Radio
MRC	Maintenance Requirements Card
MRD	Material Required Date
MRIL	Master Repairable Item List
MRT	Mean Repair Time
MS	Milestone
MSC	Military Sealift Command
MSD	Material Support Date
MSP	Maintenance Support Package
MSR	Modular Service Record

MTAT	Mean Turn Around Time
MTBF	Mean Time Between Failures
MTBMA	Mean Time Between Maintenance Actions
MTBUR	Mean Time Between Unscheduled Removals
MTTR	Mean Time To Repair
MU	Memory Unit

**N**

NACMED II	Naval Aviation Configuration Management Expertise Development
NADEP	Naval Aviation Depot
NAE	Navy Acquisition Executive
NAES	Naval Air Engineering Station
NALCOMIS	Naval Aviation Logistics Command Management Information System
NALDA	Naval Aviation Logistics Data Analysis
NALMS	Naval Aviation Logistics Management System
NAMDRP	Naval Aviation Maintenance Discrepancy Reporting Program
NAMP	Naval Aviation Maintenance Program
NAS	Naval Air Station
NAS	National Airspace Standard
NATEC	Naval Air Technical Engineering Command
NATO	North Atlantic Treaty Organization
NAVAIRSYSCOM	Naval Air Systems Command
NAVAIRHQ	Naval Air Headquarters
NAVAIRINST	NAVAIR Instruction
NAVCOMPT	Navy Comptroller
NAVCOMTELSTA	Naval Communications and Telegraphy Station
NAVFAC	Naval Facilities Engineering Command
NAVICP	Navy Inventory Control Point
NAVMED	Naval Medical Logistics Command
NAVRIIP	Naval Aviation Readiness Integrated Improvement Program
NAVRIT	Naval Aviation Readiness Improvement Team
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NBCC	Nuclear, Biological Chemical Contamination
NCCA	Naval Center for Cost Analysis

NCCOSC	Naval Command, Control, and Ocean Surveillance Center
NDI	Non-Developmental Item
NDI	Non-Destructive Inspection
NEC	Naval Enlisted Classification
NEPA	National Environmental Policy Act
NINC	Not Incorporated
NIIN	National Item Identification Number
NIST	National Institute of Standards and Technology
NLT	Not Later Than
NMC	Non Mission Capable
NMSO	Navy Maintenance Support Office
NOBC	Naval Officer Billet Classification
NOC	Not Otherwise Coded
NOMMP	Naval Ordnance Maintenance Management Program
NOR	Notice of Revision
NPRL	Non Program Related Logistics
NRE	Non-Recurring Engineering
NSD	Navy Support Date
NSN	National Stock Number
NSP	No Specified Date
NSS	National Security Strategy
NTCSS	Navy Tactical Command Support System
NTDSED	Naval Technical Directives System Expertise Development
NTRDM	Navy Training Requirements Documentation Manual
NTSP	Navy Training System Plan
NWCF	Navy Working Capital Fund

**O**

O	Organizational (maintenance level)
O&M	Operation and Maintenance
O&MN	Operation and Maintenance, Navy
O&S	Operations and Support
OA	Operational Assessment
OAG	Operation Activity Group
OBRP	On Board Repair Part
OEM	Original Equipment Manufacturer

OIPT	Overarching Integrated Product Team
OLSP	Operational Logistic Support Plan
OLSS	Operational Logistics Support Summary
OMs	Operator Manuals
OMA	Organizational Maintenance Activity
OMB	Office of Management and Budget
OMF	Operational Mission Failure
OOMA	Optimized Organizational Maintenance Activity
OPEVAL	Operational Evaluation
OPN	Other Procurement, Navy
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	OPNAV Instruction
OPTEMPO	Operational Tempo
OPTEVFOR	Operational Test and Evaluation Forces
OR	Operational Requirement
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSI	Operational Support Inventory
OSIP	Operational Safety Improvement Program
OSP	Operating Service Periods
OSP	Operations Support Plan
OST	Order and Shipping Time
OT	Operational Testing
OT&E	Operational Test and Evaluation
OTA	Operational Test Activity
OTRR	Operational Test Readiness Review

**P**

P <sup>3</sup> I	Pre-Planned Product Improvement
P&D	Production and Deployment
PAT	Process Action Team
PAT	Preliminary Acceptance Trials
PAT&E	Production Acceptance Test & Evaluation
PBD	Program Budget Decision
PBL	Performance Based Logistics
PBL	Product Baseline

PC	Personal Computer
PCA	Physical Configuration Audit
PCD	Product Configuration Documentation
PCO	Procuring Contracting Officer
PCS	Permanent Change of duty Station
PD	Program Director
PDM	Program Decision Memorandum
PDR	Preliminary Design Review
PDR	Preliminary Design Report
PDRG	Product Data Reference Guide
PDRR	Program Definition and Risk Reduction
PDS	Program Design Specification
PDSS	Post Deployment Software Support
PEB	Pre-Expend Bin
PED	Period End Date
PEDD	Portable Electronic and Display Device
PEO	Program Executive Officer
PER	Parametric Estimating Relationship
PESHE	Programmatic Environmental Safety Hazard Evaluation
PF/D&OS	Production, Fielding/Deployment, and Operational Support
PHS&T	Packaging, Handling, Storage, and Transportation
PID	Procurement Initiation Document
PKI	Public Key Infrastructure
PM	Program Manager
PM	Preventive Maintenance
PMA	Program Manager, Air
PMB	Performance Measurement Baseline
PMC	Partial Mission Capable
PMC	Procurement, Marine Corps
PMI	Proposed Military Improvement
PMIC	Periodic Maintenance Inspection Cards
PMO	Program Management Office
PMP	Program Management Proposal
PMS	Planned Maintenance System
PN	Part Number
POA&M	Plan Of Action and Milestones

POC	Preliminary Operational Capability
POC	Point Of Contact
POG	Program Operating Guide
POM	Program Objectives Memorandum
POSIT	Position Identification
PPE	Personal Protective Equipment
PPBS	Planning, Programming, and Budgeting System
PPC	Procurement Planning Conference
PPSs	Program Performance Specifications
PPS	Post Production Support
PPSP	Post Production Support Plan
PQT&E	Production Qualification T&E
PR	Procurement Request
PRC	Packaging Requirements Code
PRE	Program Related Engineering
PRL	Program Related Logistics
PRR	Production Readiness Reviews
PSA	Project Support Agreement
PSD	Program Support Date
PSD	Provisioning Support Data
PSDS	Program Support Data Sheets
PSE	Peculiar Support Equipment (NAVAIR)
PSFM	Product Support Functional Manager
PSICP	Program Support Inventory Control Point
PSM	Practical Software Measurement
PSMD	Preliminary Ship Manning Document
PSMP	Product Support Management Plan
PSQMD	Preliminary Squadron Manning Document
PSP	Phase Support Plan (Obsolete, see ULSS)
PSTL	Product Support Team Lead
PTD	Provisioning Technical Documentation
PUK	Pack-Up Kit
PVS	Prime Vendor Support

**Q**

QA	Quality Assurance
QPR	Quality Program Review

**R**

R	Reliability
R-TOC	Reduction-Total Ownership Cost
R&D	Research and Development
R&M	Reliability and Maintainability
RAM	Random Access Memory
RAMEC	Rapid Action Minor Engineering Changes
RBL	Reliability Based Logistics
RBS	Readiness Based Sparing
RCM	Reliability-Centered Maintenance
RD&A	Research, Development and Acquisition
RDT&E	Research, Development, Test, and Evaluation
REDET	Requirements Determination
REMAN	Remanufacture
REPRO	Reproduction
RFD	Request For Deviation
RFI	Ready For Issue
RFM	Requiring Financial Manager
RFP	Request For Proposals
RFW	Request For Waiver
RI	Related Information
RI	Referential Integrity
RILOP	Reclamation In Lieu Of Procurement
RILSD	Resident Integrated Logistics Support Detachment
RIP	Readiness Improvement Program
RLA	Repair Level Analysis
ROI	Return On Investment
ROR	Repair of Repairables
RWR	Radar Warning Receiver



**S**

S	Supply
<u>S</u>	Supportability
S&I	Standardization and Interoperability
S&RP	Spares and Repair Parts
S&T	Science & Technology
S2K	System 2000
SA	System Administrator
SA	Supportability Analysis
SABI	Secret And Below Interoperability
SAE	Service Acquisition Executive
SAG	Sub-Activity Group
SAMP	Single Acquisition Management Plan
SAP	Site Activation Plan
SAR	Selected Acquisition Report
SARDIP	Stricken Aircraft Reclamation Disposal Program
SASS	Supplemental Aviation Spares Support
SAT	Site Activation Team
SAVAST	Ships AVCAL Asset Demand Tape
SBIR	Small Business Innovation Research
SCE	Software Capability Evaluation
SCP	Special Contract Provision
SHORCAL	Shore Based Consolidated Allowance List
SCMP	Software Configuration Management Plan
SCN	Shipbuilding and Conversion, Navy
SCN	Specification Change Notice
SD&D	System Development and Demonstration
SDD	Software Design Document
SDLM	Standard Depot Level Maintenance
SDP	Software Development Plan
SE	Support Equipment
SE	System Engineering
SE LEM	Support Equipment Logistic Element Manager
SECDEF	Secretary of Defense
SECNAV	Secretary of The Navy
SECNAVINST	SECNAV Instruction

SEI	Software Engineering Institute
SEMP	System Engineering Management Plan
SEPO	Support Equipment Project Officer
SERD	Support Equipment Recommendation Data
SERMIS	Support Equipment Resources Management Information System
SES	Senior Executive Service (Civil Service employee classification)
SFPS	Shore Facility Planning System
SFR	System Functional Review
SGML	Standard Generalized Mark-up Language
SGR	Sortie Generation Rate
SHORCAL	Shore Based Consolidated Allowance List
SIPs	Software Installation Plans
SIPT	Supportability Integrated Program Team
SIRFC	Suite of Integrated Radio Frequency Countermeasures
SLEP	Service Life Extension Program
SM&R	Source, Maintenance and Recoverability (Code)
SMD	Ships Manning Document
SME	Subject Matter Expert
SML	Support Material List (NAVAIR, see ISIL)
SOF	Safety Of Flight
SOM	Systems Operators Manual
SOO	Statement Of Objectives
SOO	Safety Of Operations
SOW	Statement of Work
SPAWAR	Space and Naval Warfare Systems Command
SPI	Single Process Initiative
SPC	Statistical Process Control
SPP	Sponsor Proposal Program
SPSE	Special Purpose Support Equipment
SQAP	Software Quality Assurance Plan
SQL	Structured Query Language
SQPP	Software Quality Program Plan
SRA	Shop Replaceable Assembly
SRA	Selected Restricted Availability
SRC	Scheduled Removal Card
SRR	System Requirements Review

SRS	Software Requirements Specifications
SRU	Shop Replaceable Unit
SS	Support Synthesis
SS	Supply Support
SSA	Software Support Activity
SSA	Source Selection Authority
SSD	Software Support Date
SSMP	Supply Support Management Plan
SSPP	System Safety Program Plan
SSPS	Support Software Program Packages
SSR	Software Specification Review
SSR	Supply Support Request
SSS	System Segment Specifications
SSSA	System Software Support Activity
SST	Ship Suitability Test
ST/STE	Support Equipment Tools and Test Fixtures
STARS	Standard Accounting and Reporting System
STD	Standard
STDs	Software Test Documents
STrP	Software Transition Plan
SYSCOM	Systems Command
SVR	System Verification Review
SVT	System Verification Test
SW-CMM	Software Capability Maturity Model

## T

T&E	Test and Evaluation
T&TD	Training and Training Devices
T&TS	Training and Training Support
T/O	Table of Organization
TA	Training Agent
TAA	Team Assignment Agreement
TAC	Transportation Accounting Code
TADSTAND	Tactical Digital Standard
TARP	Technical Assistance for Repairables Protection
TAT	Turn Around Time

TBAM	Trigger Based Asset Management
TBS	Task Breakdown Structure
TD	Technical Data
TD	Technical Directive
TD	Training Device
TDC	TD Compliance
TDKSR	TD Kit Shipment Report
TDP	Technical Data Package
TDRD	Training Device Requirements Document
TDSA	Technical Directive Status Accounting
T&E	Test and Evaluation
TEAM	Naval Aviation Systems Team
TEC	Type Equipment Code
TECHEVAL	Technical Evaluation
TEMP	Test and Evaluation Master Plan
TIM	Technical Interchange Meetings
TLM	Top Level Matrix
T/M	Type/Model
TM	Technical Manual
TMCR	Technical Manual Contract Requirement
TMDE	Test, Measurement, and Diagnostic Equipment
TMP	Technical Management Plan
TMS	Type Model Series
TMMT	Technical Manual Management Team
TOA	Total Obligational Authority
TOC	Total Ownership Cost
TP	Test Program
TPDR	Technical Publications Discrepancy Report
TPS	Test Program Set
TPTK	Team Process Tool Kit
TPWG	Test Planning Working Group
TRPPM	Training Planning Program Methodology
TRR	Test Requirements Review
TRR	Test Readiness Review
TRS	Technical Repair Standards
TSA	Training Situation Analysis

TSA	Technical Support Activity
TSA	Training Support Agent
TSAR	Training System Alternatives Report
TSFD	Training System Functional Description
TSPR	Total System Program Responsibility
TSRA	Training Systems Requirements Analysis
TTD	Training and Training Devices
TTE	Technical Training Equipment
TWP	Team Work Plan
TYCOM	Type Commander

**U**

UIC	Unit Identification Code
ULSS	User's Logistics Support Summary
UNS	Uniform Numbering System
USD (AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)
USMC	United States Marine Corps
USSOCOM	United States Special Operations Command

**V**

V&V	Validation and Verification
VAL	Validation
VAMOSC	Visibility And Management Of Operating Support Cost
VCJCS	Vice Chairman, Joint Chiefs of Staff
VDDS	Visual Dynamic Display Simulation
VER	Verification
VPV	Virtual Prime Vendor
VSLED	Vibration, Structural Life, and Engine Diagnostics
VTC	Voice Teleconference

**W**

WARM	Wartime Reserve Mode
WBS	Work Breakdown Structure
WCF	Working Capital Fund
WPN	Weapons Procurement, Navy
WRA	Weapons Replaceable Assembly (Aviation systems)
WSAP	Weapon System Acquisition Process
WSF	Weapon System File
WSM	Weapon System Manager
WSPD	Weapon System Planning Document
WSR	Weapon System Reliability
WSSSFP	Weapons System Support Funding Profile
WSESRB	Weapon System Explosive Safety Review Board
WUA	Work Unit Assignment
WUC	Work Unit Code

## **APPENDIX - B**

### **ACQUISITION DOCUMENTATION**

#### **Table of Contents**

B-1 - COMMERCIAL OFF-THE-SHELF / NON-DEVELOPMENTAL ITEM (COTS/NDI)

B-2 - CONCEPT OF OPERATIONS

B-3 - FOREIGN MILITARY SALES (FMS) INTEGRATED LOGISTICS SUPPORT  
ACQUISITION MANUAL (ILSAM)

B-4 – METRICS

B-5 - MISSION NEEDS STATEMENT (MNS)

B-6 - DOD 5000 MODEL

B-7 - OPERATIONAL REQUIREMENTS DOCUMENT (ORD)

## B-1 - COMMERCIAL OFF-THE-SHELF / NON-DEVELOPMENTAL ITEM (COTS/NDI)

**WHO –** OSD, ASN, OPNAV (N-78, N-43, HQMC), NAVAIR, PEO, PM, APML, APMSE, NAVICP, TYCOM, Prime Contractors/Vendors

### **WHAT –**

#### ***Commercial Item:***

- The Federal Acquisition Regulation (FAR) definition is, any item, other than real property, customarily used for nongovernmental purposes that has been offered and/or sold, leased or licensed to the general public. This includes items that:
  - Through advances in technology or performance, are not yet available in the commercial market, but will be available in time to meet the delivery requirements;
  - May incorporate modifications customarily available in the commercial market or minor modifications made to meet DoD requirements;
  - Are customarily combined and sold in combination to the general public;
  - Are for installation, maintenance, repair, training and other services procured to support an item if those services are offered to the general public and the Federal Government simultaneously and under similar terms and conditions, and the work force providing those services is the same used for providing such services to the general public;
  - Are services offered and sold competitively in substantial quantities in the commercial market based on established catalog or market prices for specific tasks performed and under standard commercial terms and conditions;
  - Are transferred between or among separate divisions, subsidiaries, or affiliates of a contractor; or
  - Are non-developmental, if the procuring agency determines the items were developed exclusively at private expense and sold in substantial quantities on a competitive basis to multiple State and local governments.

#### ***Commercial Off-the-Shelf (COTS) Item:***

- The Federal Acquisition Reform Act (FARA) definition is:
  - commercial
  - sold in substantial quantities in the commercial marketplace; and
  - offered to the government, *without modification, in the same form in which it is sold in the commercial marketplace*. Standard options are not considered modifications.



***Non-Developmental Item:***

- The Federal Acquisition Regulation definition is;
  - A statutory term describing items that have been previously developed for production
  - Any previously developed item used exclusively for governmental purposes by a Federal agency, a State or local government, or a foreign government with which the U.S. has a mutual defense cooperation agreement; any item just described that;
    - Requires only minor modification to meet the requirements of the procuring agency
    - Any item currently being produced that does not meet the requirements because the item is not yet in use.

**WHY –** COTS/NDI acquisitions offer significant payoffs in terms of cost and time because;

- Item has already gone through R&D and been proven in the DoD or commercial sector
- The DoD is no longer in a position to dictate technology direction, but should take advantage of these new acquisition strategy options and become a commercial consumer
- Getting out of the traditional Military Specifications (MILSPEC) environment can allow for the following:
  - Rapid equipment introduction and support to meet new operational requirements
- Affordability
  - State-of-the-Industry commercial technology
  - Large commercial runs
  - Support infrastructure in place and large user base
  - Wholesale cost avoidance
  - Elimination or reduction of government R&D
  - Selective evolution of legacy systems
  - Reduction of technical, cost, schedule and performance risks
  - Large commercial user base provides the best protection against a vendor discontinuing production without offering a compatible replacement.

**WHEN –**

- Support planning for a COTS/NDI system should occur as early as possible in the acquisition process
- Traditional Product Support procedures, when applied to COTS/NDI acquisitions, result in support planning much too late to influence the process of selecting, acquiring and supporting COTS/NDI
- The rapid pace of COTS/NDI acquisitions and deployment may surpass traditional support lead-times.

**WHERE –** NAVAIR, Fleet, Commercial Industry

**HOW - Major Logistics Planning Steps:** (see ILS Tool Box links below for detail COTS/NDI ILS process)

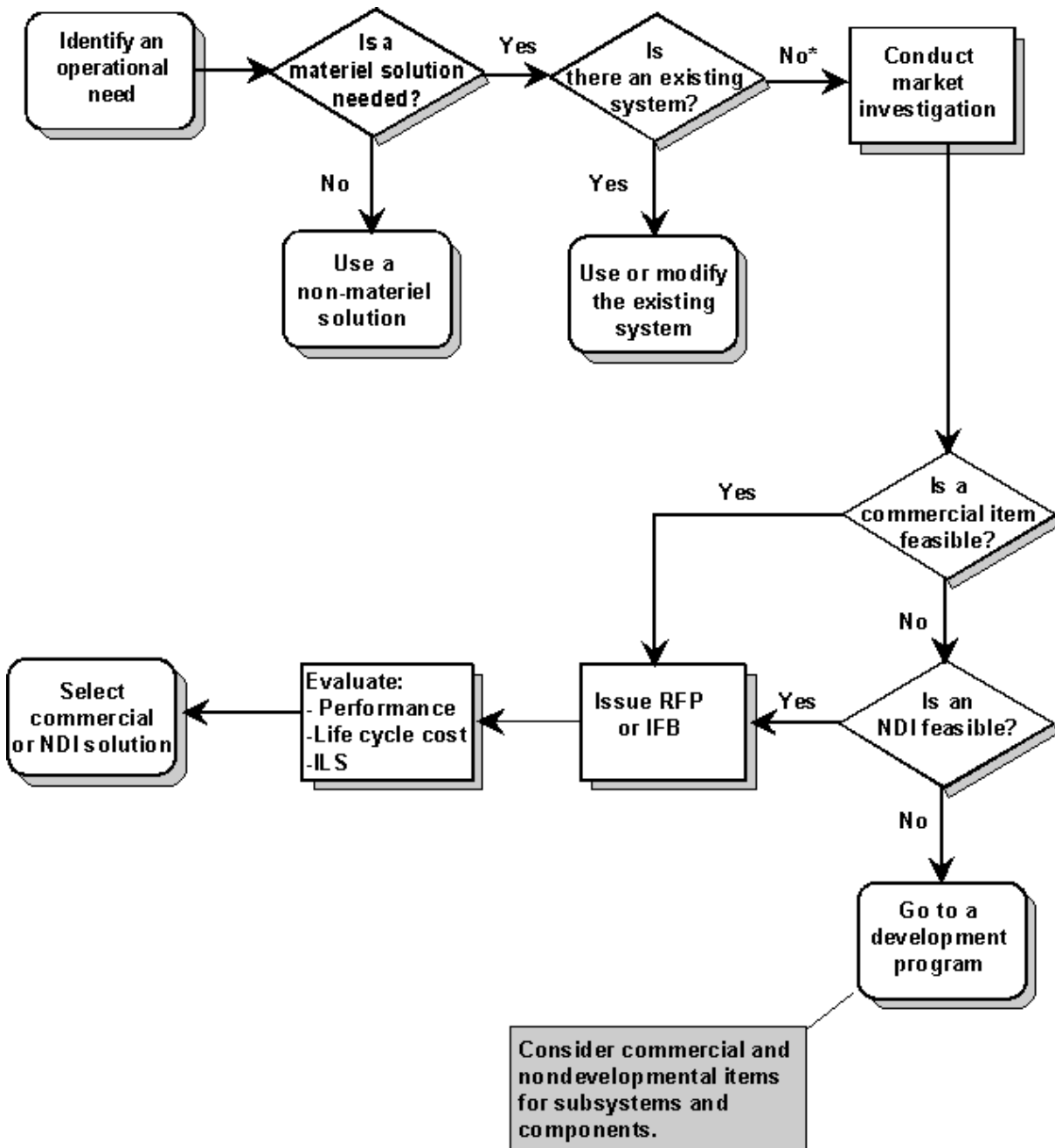
- Logistic considerations must be addressed during the selection of a commercial or non-developmental item (see figure below)
- The major steps required to ensure that adequate logistics planning has taken place are described below:
  - Review operational requirements
  - Identify and obtain support data
  - Analyze support data
  - Make operational assessment decision
  - Provide for interim support, and develop interim support plan
  - Develop and assess final support plan.

**APML ROLE –**

- Ensure supportability aspects are fully addressed when COTS/NDI alternatives are being considered
- The specific goals of the logistics support program for a commercial or non-developmental item are to:
  - Influence the selection of the item based upon logistics considerations and best value.
  - Negotiate appropriate logistic support

Awareness of documented problems with customizing COTS/NDI equipment to fit a requirement

## The Commercial/NDI Decision Process



\* In preparation for the market investigation establish objectives and thresholds for cost, schedule, and performance based on the users' operational and readiness requirements.

**POC -**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.5.3	PBL & Material Management	NAVAIR HQ	(301) 757-9183

**REF –** See web site, Non-developmental item SD-2 for references

**LINKS -**

<https://www.nalda.navy.mil/documentation.html>

Non-developmental item SD-2

<http://dsp.dla.mil/documents/sd-2/chapter4.htm>

Defense Standardization Program Journal

<http://www.acq-ref.navy.mil/tools/turbo/topics/by.cfm>

Guide for performance-based Statement of Work (SOW)

<http://www.acq-ref.navy.mil/tools/turbo/topics/bq.cfm>

Guide for Statements of Objectives (SOO).

[http://www.navair.navy.mil/air10/air13/97\\_PID.pdf](http://www.navair.navy.mil/air10/air13/97_PID.pdf)

NAVAIR's Procurement Initiation Document (PID) Guide, August 1995

<http://www.dsp.dla.mil/documents/sd-2/>

SD-2 - Buying Commercial & Non developmental Items Handbook

<http://www.acq.osd.mil/es/std/ndi/sd-5.htm>

SD-5 "Market Research," July 1997. Guidance for conducting market research.

<http://www.nslc.navsea.navy.mil/TechLog/CANDI/CANDI.htm>

NAVSEA web-handbook that provides supply support policy guidance for COTS/NDI acquisitions

<http://www.sei.cmu.edu/cbs/index.html>

Additional information on the use of COTS-Based Systems (CBS) plus additional links from the Carnegie Mellon Software Engineering Institute (SEI)

## B-2 - CONCEPT OF OPERATIONS

**WHO** – NAVAIR, PM, APML, IPTs, Fleet

**WHAT** – The Concept of Operations is a concise yet descriptive narrative of how a weapons system will be employed and supported to accomplish the assigned mission.

- Describes for the decision makers what to expect in the way of resource requirements and the performance those requirements will produce.

**WHY** – Required to provide the overall product support strategy and planning included in the PM's Acquisition Strategy

**WHEN** – Concept Exploration and Advanced Component Development

**WHERE** – DoD Component (OPNAV N-78, HQMC), NAVAIR, PM

### HOW -

#### Concept Exploration

Product Support activities that must be accomplished During Concept Exploration are described below. Known or projected Product Support constraints have been identified in the MNS. These constraints should be based on analysis of systems currently in the inventory that satisfy similar needs. Study efforts should provide for:

- Identification of support costs, manpower requirements, readiness drivers of current systems, and readiness and support cost targets for improvement.
- Development of alternative operational and Support Concepts, including the Maintenance Concept, and evaluation of their potential implications on support resources (e.g., manpower quantities by skills or aptitude level, training concept and resources, facilities).
- Assessment of potential Product Support requirements, resource impacts, and risk reduction measures for alternative Acquisition Strategy options, including accelerated acquisition strategies.
- Identification of Product Support technologies that are or will be available for insertion into proposed concepts.

#### Component Advanced Development (CAD)

Activities that must be accomplished before Milestone B during Component Advanced Development (CAD) are described below.

A baseline support concept, including a maintenance concept backed up by documented analyses, should be determined.

Supportability analyses required to consider alternatives for support should be completed and the results documented.

A consistent set of objectives and thresholds for Readiness, Reliability, and Maintainability (including integrated diagnostics, if applicable), and other Product Support parameters should be established and presented in comparison to a contemporary baseline system. Both technical thresholds (to be verified by development test and evaluation) and operational thresholds (to be verified by operational test and evaluation) should be established for R&M, inherent availability, and Operational Availability ( $A_0$ ).

The sensitivity of manpower and other Product Support to changes in key parameters (including R&M and utilization rate) and the associated impact on system readiness and supportability should be analyzed and logistic risk areas identified.

Manpower requirements documented in product support planning should be consistent with those reported in the Manpower Estimate Report (MER).

Tradeoffs should be conducted to determine the best balance among hardware and software characteristics, Product Support concepts, and Product Support resource requirements. Changes to established requirements for Product Support resources should be identified.

NATO standardization and interoperability requirements should be reflected in Product Support planning when appropriate.

Product Support considerations should be clearly defined and given appropriate weight in RFPs, source selection evaluation factors, and contract provisions.

T&E plans should be adequate to develop a database for quantitatively assessing achievement of Product Support thresholds, adequacy of Product Support plans and resources, and impact on cost and readiness objectives.

A preliminary list of candidate items should be developed for contractor support during initial support period.

Facilities design planning should be initiated, completed, and be ready for contract award in the year that facilities will be authorized and funds appropriated.

Clearly defined systems engineering procedures (such as the Reliability-Centered Maintenance (RCM) approach) should be defined to influence the evolving system design, to define automated diagnostics requirements, and to determine product support functional structure.

## Acquisition Logistics Support Planning

The program manager, in coordination with the military service logistics commands, shall include Product Support Management Planning (PSMP) throughout the life cycle as part of the support strategy documented in the acquisition strategy at **Milestone B**. The ALSP (DON requirement) provides a complete and integrated plan for delivering maintenance capability and material support for the fielded weapon system throughout the life cycle. The development of product support requirements begins early in the acquisition process, during Component Advanced Development, and evolves as the program progresses. The ALSP is updated before Milestone B concurrently with the Acquisition Strategy. The following definitions apply and are interrelated:

**Acquisition Program.** A directed, funded effort that is designed to provide a new, improved, or continuing materiel, weapon or information system capability, or service, in response to a validated operational or business need. Acquisition programs are divided into different categories that are established to facilitate decentralized decision-making, execution, and compliance with statutory requirements. Technology projects are not acquisition programs.

**Acquisition Strategy.** A business and technical management approach designed to achieve program objectives within the resource constraints imposed. It is the framework for planning, directing, contracting for, and managing a program. It provides a master schedule for research, development, test, production, fielding, modification, postproduction management, and other activities essential for program success. The acquisition strategy is the basis for formulating functional plans and strategies (e.g., Test and Evaluation Master Plan (TEMP), Acquisition Plan (AP), C4I Support Plan, competition, prototyping.).

**Acquisition Plan (AP).** A formal written document reflecting the specific actions necessary to execute the approach established in the approved acquisition strategy and guiding contractual implementation.

**Acquisition Logistics Support Plan (ALSP).** The ALSP includes actions to ensure sustainment and continually improve product affordability for programs in initial procurement, reprocurement, and post-production support. ALS planning demonstrates an integrated acquisition and logistics strategy for the life of the system or subsystem. The ALSP is updated iteratively during the product's life cycle depending on the pace of technology. As a minimum, The ALSP addresses how the program will accomplish the following objectives:

- Integrate supply chains to achieve cross-functional efficiencies and provide improved customer service through performance-based arrangements or contracts such as the Integrated Maintenance Concept.
- Segment support by system or subsystem (such as using Work Centers) and delineate agreements to meet specific customer needs.

- Maintain relationship with the user and warfighter based on system readiness (include the Fleet in early IPT meetings).
- Provide standard user interfaces for the customer via integrated sustainment support centers such as FSTs.
- Select best-value, long-term product support providers and integrators based on competition (Right Sourcing) and Performance Based Logistics (PBL).
- Measure support performance based on high-level metrics, such as (TOC, System Availability) of mission-capable systems, instead of on distinct elements such as parts, maintenance, and data and provide the link to the Product Support functions with an analytical, logical, repeatable, auditable, step-by step analysis process.
- Improve product affordability, system reliability, maintainability, and supportability via continuous, dedicated investment in technology refreshment through adoption of performance specifications, commercial standards, and Commercial-Off-The-Shelf and Non-Developmental Items (COTS/NDI) where feasible, in both the initial acquisition design phase and in all subsequent modification and reprourement actions by tailoring the supportability analyses.

The ALSP describes and documents the elements/events/event interdependency / logistics program and the Logistics Manager's approach for implementing the logistics program. It provides a complete and integrated plan for delivering maintenance capability and material support for the fielded weapon system. It is used to document the organization, function, responsibility, and approach (including related schedules and actions) for meeting overall product support requirements.

***ALSP is approved by the PMA*** and serves as the top-level document under which the product support contract requirements are developed. Product support planning data that must be included in the ALSP is presented in Figure B-2-1.

<b><u>Acquisition Logistics Support Planning</u></b>	<b><u>Product Support Data</u></b>
• Introduction	Operational Scenario
• System description, delivery, installation	Support System Performance Factors
• Related programs	
• GANTT chart schedules	Maintenance Capability and Material Support Milestones
• Product Support Management	Business and Contracting Strategy
• <u>S</u> Analysis	Technology Assessment
• Product Support Functional Plan	Maintenance Concept

B-2-1 Product Support Planning Data



The Product Support strategy corresponds to the Acquisition Plan published by the PM. The APML is responsible for providing product support inputs to the Acquisition Plan identified in Figure B-2-2.

- |                             |                                     |
|-----------------------------|-------------------------------------|
| • Total Ownership Cost      | • Tailoring                         |
| • Tradeoffs                 | • Approval for operational use      |
| • Competition               | • Contracting and contract type     |
| • Budgeting and funding     | • Product Support considerations    |
| • R&M and Quality Assurance | • Contractor data                   |
| • Standardization concepts  | • Spares, and repair parts breakout |
| • System safety             |                                     |

Figure B-2-2

### APML ROLE –

- Initiate, develop requirements for Concept of Operations document within the IPT process for the overall program product support concept, strategy and planning for employment over the life cycle.
- Provide IPT with support requirements, strategy and planning to satisfy definition of overall product support program and employment concept required for the Concept of Operations document and the program's Acquisition Strategy.

### POC – PEO, PMA, APML

**REF** – DoD 5000.2R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002), Chapter 4, Chapter 5- C5.2.3.5.4.2. Support Concepts, Chapter 6 - C6.4.2 Appendix 2 – AP2.1.2

For a complete list of definitions for acquisition and Product Support, refer to Key Terms, Appendix B, Volume I, Product Support Fundamentals.

### LINKS –

<http://deskbook.dau.mil>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing Systems

<http://www.nalda.navy.mil/3.6.1/alsp/html>

Acquisition Logistics Support Plan

## **B-3 - FOREIGN MILITARY SALES (FMS) INTEGRATED LOGISTICS SUPPORT ACQUISITION MANUAL (ILSAM)**

**WHO** - FMS Deputy APML (DAPML)

**WHAT** - The FMS DAPML is a 3.0 asset assigned to a domestic Program Manager's platform to provide ILS support to the FMS Case Manager in that platform's Program Office. The FMS DAPML's first line of supervision is the FMS PSTL, and they both will work very closely with the APML/Domestic PSTL to coordinate ways to merge both acquisition efforts in a mutually beneficial process.

**WHY** - International customers come to the USN/USMC to purchase "off-the-shelf" or modified weapons systems. These systems can be procured on a Joint or Co-operative military program buy, or under an independent FMS case. They can opt for a straight Navy buy, or a combined Navy/commercial vendor acquisition effort. And the sale can range from an initial acquisition/mod of a platform with full support, to a sustainment effort. FMS ILS taskings parallel the same types of efforts that domestic DAPMLs use to support the fleet. Used effectively, an FMS sale can result in many benefits to both users by: cost effectively combining efforts on mods and updates; making joint buys that can reduce costs of spares and support equipment; and sharing RDT&E and technical data costs. In some cases, the FMS customer can keep a production line open after the domestic requirements have ceased, benefiting US sustainment.

**WHEN** - Sales to FMS customers can come in at any time throughout the USN/USMC acquisition milestone periods. If the FMS DAPML is brought into the domestic planning process early, he can help the foreign user plan ahead so that he can join in on the US buy. The FMS user must address the same concerns as the fleet regarding costs/schedule/readiness, and they need planning time to address their own financial requirements. The FMS DAPML can also inform the APML of pending foreign requirements, providing possible acquisition mergers that could benefit both users. This can be especially effective when addressing readiness issues and provides a combined multi-country/Navy front when going out to vendors for support.

**WHERE** - NAVAIR, PEO, PM, IPT

**HOW** - The FMS DAPML must address the same aspects of procurement that his domestic counterpart does. This includes logistics processes that impact Operation and Support (O&S) costs, which are estimated to comprise over 75% of a weapon system's Life Cycle Cost (LCC) for an "off-the-shelf" system. O&S costs consist of all costs incurred by a user to field and sustain a weapon system, including: personnel, spares and repair parts, fuel, transportation, training, data, maintenance, replenishment and attrition. These costs are a sub-set of a system's overall LCC that began with the Research and Development (R&D) phase, and end with the disposal phase. For example, the FMS DAPML must provide the FMS Case Manager with:

- Analytical data for cost and readiness goals that flow from an overall logistics strategy
- Validate a potential supplier's proposal and forecast O&S costs
- Prescribe procurement strategies to reduce costs for a desired configuration
- Monitor the status of a supplier's procurement and delivery system.
- Streamline supply chain management
- Adopt alternatives to poor vendor supply/repair performance
- Solve obsolescence problems
- Encourage the procurement of USN interoperable systems/sub-systems that will foster mutual ILS support throughout the life cycle of both the domestic and the FMS user.

**APML ROLE** - One of the specific ways the APML can ensure mutual support goals are being met is to include the FMS ILS manager in domestic support functions and meetings. Following is a list of recommended meetings that will allow the FMS DAPML to keep his country informed in a timely manner that allows them to plan ahead and join in the domestic effort.

- ILSMTs
- Program Reviews
- MELR engine meetings
- ECP process meetings
- PBL process meetings
- Configuration management meetings
- Pubs/IETMs process meetings

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.0F	Director FMS Logistics		
AIR-3.1			
AIR-3.1.2.C	PEO A (L)		(301) 757-6733
AIR-3.1.2M	PEO A (P-3)		(301) 757-5618
AIR-3.1.1C	PEO T (F-18)		(301) 757-7570
AIR-3.1.1C2	PEO T (F-18)		(301) 757-7519
AIR-3.1.1F	PEO T (E-2)		(301) 757-7212
AIR-3.1.3	PEO W (L)		

**REF -**

Foreign Military Sales (FMS) Integrated Logistics Support Acquisition Manual (ILSAM) - process owner: Air-3.0

**LINKS -**

<https://fms.navair.navy.mil>

<https://151.200.204.47/webpage.nsf/pages/air30>

<http://www.navicp.navy.mil>

Naval Supply Systems Command

## B-4 - METRICS

**WHO** – PM, APML, APMSE

**WHAT** – Metrics are meaningful measures. For a measure to be meaningful, it must present data that encourages the right action. The data must be customer oriented, related to the product or service you provide, linked to the process generating that product or service, and supporting one or more organizational objectives. Metrics are also integral in measuring the success of our strategic plans. We put a plan in place to establish where we are and where we want to go, and then use metrics to measure our progress towards achieving those goals and objectives. Ultimately, metrics foster process understanding and motivate action to continually improve the way we do business. This is what sets metrics apart from measurement. Measurement does not necessarily result in process improvement. Effective metrics always will.

**WHY** – Metrics facilitate and sustain the “right” improvements. Metrics help us understand our processes and their capabilities so we can continually improve them.

**WHEN** – Metrics selection and design for a program should begin at Milestone A and be utilized throughout the life of the program.

**WHERE** – NAVAIR, PM, IPTs, Prime Contractor



**HOW** – Metric requirements are usually based on requests and therefore come with specific instructions on the format and criteria to be measured. However when the need arises to establish a metric for what ever reason, the following general guidelines apply:

Many metrics, such as those relating to cost, schedule, and performance, can be used throughout the program's life cycle, while others may be tied to only one portion of the program. Choosing quality over quantity of metrics is a continuing challenge.

***Attributes generally associated with a good metric: (as a minimum)***

- Has value to the team members or is an attribute essential to customer satisfaction with the product
- Tells how well organizational goals and objectives are being met through processes and tasks
- Is simple, understandable, logical and can be used repeatedly
- Shows a trend
- Is unambiguously defined
- Uses data that is cost-effective to collect
- Allows for timely collection, analysis, and reporting of information
- Provides insight that drives appropriate actions

***Major Categories of Metrics:***

- Progress metrics:
  - are used to monitor the health and status of the program.
  - They serve as alarms for adverse trends.
  - These metrics must allow for the detection of adverse trends in sufficient time to permit corrective actions (see Figure below for an example of a progress metric). Metrics that indicate a trend after the outcome has become a *fait accompli* are useless as control metrics.
- Examples progress metrics:
  - Cost performance index and variance
  - Schedule performance index and variance
  - Earned value
  - Risk assessment tracking
  - Manpower (planned versus actual)
  - Deliveries

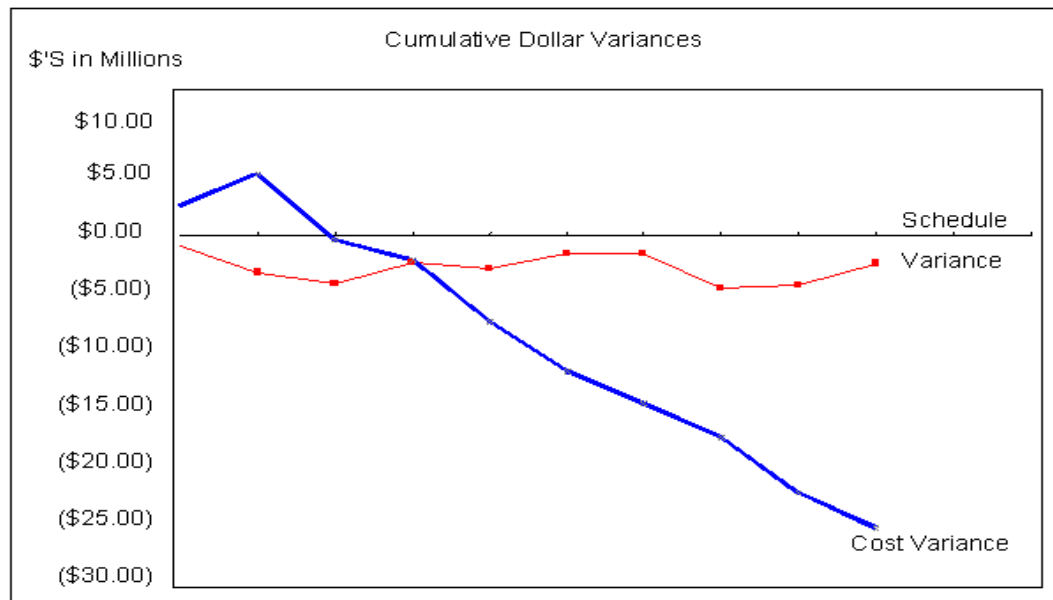


Figure 4-1. -- Sample Progress Metric

**Product metrics:**

- are measures of a program's technical maturity and are tied to the key performance parameters of a product.
- For developmental programs, these measures are found in the Operational Requirements Document (ORD) as objectives and thresholds and in the Test and Evaluation Master Plan (TEMP) as critical technical parameters (see Figure below for an example of a product metric). Each performance parameter has an associated cost, schedule, and risk impact.
- Metrics of this type indicate to teams whether or not the desired technical performance is achievable given the constraints of the program. To ensure a degree of commonality in reporting metric data to higher-level teams, the program team should determine the objectives that each sub-tier team is to accomplish, the frequency and level of detail of their reporting, and the allowed variation for each product metric.

**Examples of product metrics:**

- Operational availability
- Weight budget
- Mean Time Between Failures (MTBF)
- Speed
- Range
- Payload
- Product unit cost
- Power consumption

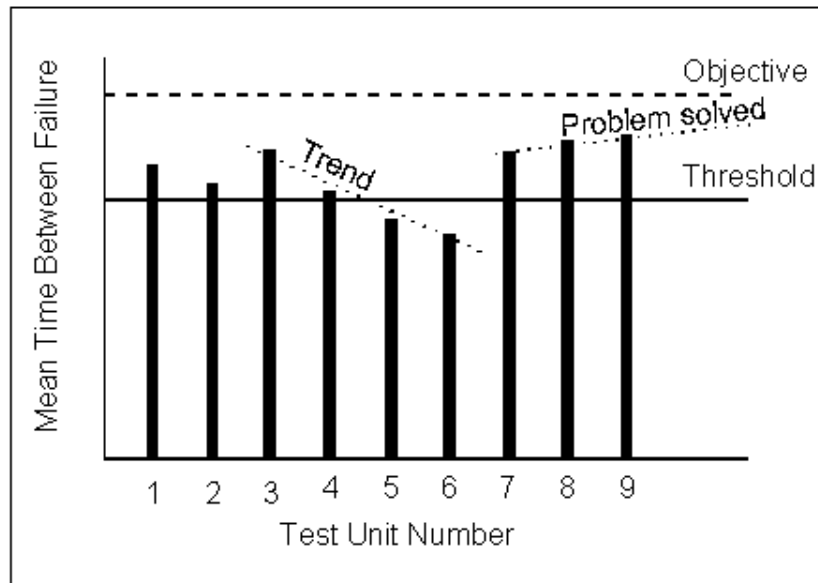


Figure 4-2 Sample Product Metric

**Process metrics:**

- Assess the quality and productivity of a program's processes. In order to improve a process, it must be understood and measured.
- Data is collected at specific checkpoints in the process flow and then analyzed.
- The analysis of the data should be able to predict quality at later stages in the process (see Figure below for an example of a process metric).
- Process metrics are a concern not only of the Integrated Product and Process Development (IPPD) stakeholders or IPTs measuring them, but also of the functional organizations (such as budgeting, contracting, or testing) that own the processes being measured.



- Cooperation is essential to ensure that the best metrics are used or developed. Usually compare current/predicted performance versus performance objectives. A standard of performance is set using historical data or expected levels of performance. The process is then measured to see whether the objective is being met. If the objective is not met, analysis should determine why. If the objective is missed, it might suggest that the objective was not properly set. In either case, the process should be examined for ways to improve process performance and thereby establish a new objective.
- Statistical Process Control (SPC) is a good method to use for monitoring, controlling, and improving processes (see [Section 7.3.6](#)).

***Examples of process metrics are:***

- Number and cost of requirements changes
- Number and cost of engineering change proposals
- Number and cost of test failures
- Cycle Time
- Defect rates

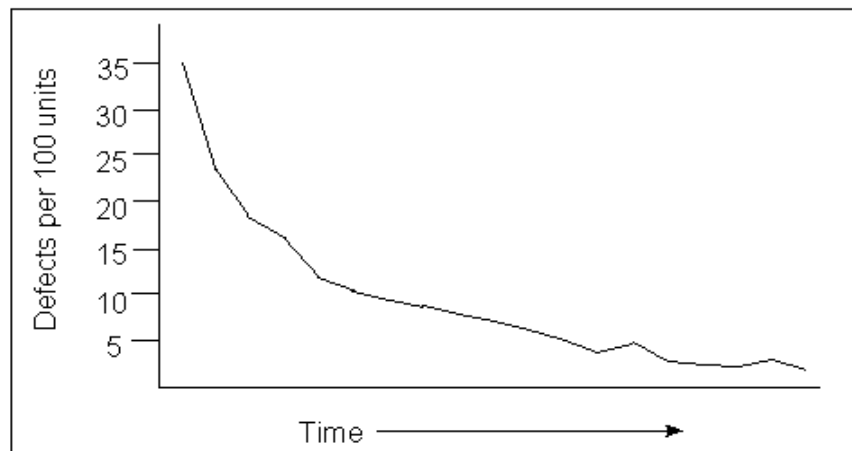


Figure 4.3. Sample Process Metric

**Metric Development Process**

Choosing or creating metrics is not a random process. Developing a measurement system requires an in-depth understanding of customer and project requirements. Program processes and process outputs must be identified. From there, process output thresholds must be determined and the appropriate measures or performance indicators developed. The following nine-step process is not the definitive methodology for metric development, but it does provide guidance in what to consider when creating or choosing a metric, specifically for process metrics.

1. **Identify the purpose of the metric.** Is this metric intended to provide data only to the team creating it or will it be reported to higher level teams? What type of metric is needed -- programmatic/management control, technical performance measure, or process?
2. **Define what is to be measured.** Identify what it is that needs to be measured to satisfy the purpose (see step 1). If the process that is to be measured is not clearly understood in terms of cause-and-effect relationships, then the measurement will consist of a trial-and-error determination of seemingly related factors that may or may not have a bearing on the outcome.
3. **Identify and examine existing metrics.** Once the cause-and-effect relationships have been identified, existing metrics from this or other programs should be examined to determine if any of them satisfies the requirement. It makes good sense to use a proven metric when the process previously measured matches or parallels the process under consideration.
4. **Generate new metrics if existing metrics are inadequate.** When generating a new metric, pay attention to what is needed as an output of the process to be measured and how that output contributes to the end product. With metrics, the focus is on a process' contribution to these final outputs. Teams should be interested in those measures that drive the final outcome and are key to making process improvements.
5. **Rate the metric against the attributes of a good metric.** Refer to the attributes listed in section 4.1. The metric should satisfy all of the criteria listed. If it does not, return to step 2 and correct the deficiencies.
6. **Select the appropriate measurement tools.** Keep in mind that the metric data should be economical to gather. This includes the hours spent gathering the data, processing it and the time required to display it. Automated data gathering is preferred, but many collection processes do not lend themselves to automation. Once the data is gathered, it often requires analysis or processing to be useful. There are many means of analyzing and displaying the data, such as process variance charts and control charts for process data. In some cases, a specialist may be needed to analyze and present the data.

7. **Baseline the metric.** This will serve as a reference point to begin acquiring data and measuring any changes.
8. **Collect and analyze metric data over time.** Aggregate metric data over time and examine trends. Special and/or common causes of effects on the data should be investigated. Compare the data with the baseline to ascertain improvement, decline, or no change. Utilize SPC when and as appropriate.
9. **Initiate process improvement activities.** Initiate iterative process improvement activities with key process owner involvement. Once the process has been changed, the data must be closely watched for trend improvement. If degradation is noticed, the reason for it must be identified and corrected. The process should not be changed until data trends have been clearly established, unless a change is required to correct a previous change that resulted in a decline in performance.

#### APML ROLE –

- Analyze requirements within the IPT process to determine the benefit or need for establishing metrics.
- Identify appropriate product support items for which metrics should be established.
- When metric results provide indication for action to improve processes, products and or activities to meet an intended need, initiate appropriate action.

Metrics are a recurring requirement and vary depending on the activities and OPTEMPO of the program.

**POC** – Depends on the request or the need for a metric to be developed.

#### REF –

AFMC Pamphlet 90-102

DoD Integrated Product & Process Development Handbook August 1998

#### LINKS -

[http://afmc.wpafb.af.mil/pdl/afmc/pam/90series/90\\_102/90-102p.pdf](http://afmc.wpafb.af.mil/pdl/afmc/pam/90series/90_102/90-102p.pdf)

AFMC Pamphlet 90-102

<http://www.deskbook.osd.mil>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[DoD Integrated Product and Process Development Handbook August 1998](#)

Chapter 4 Metrics (Discretionary)

## B-5 - MISSION NEED STATEMENT (MNS)

### NOTE:

In Accordance With (IAW) Joint Chief of Staff (JCS) Memo 7 October 2002, The MNS will be replaced by the Initial Capabilities Document (ICD) in the next revision to the Chairman Joint Chief of Staff (CJCS) Instruction 3170.01B. Current approved MNS will continue to be valid.

IAW the Deputy Secretary of Defense (DEPSECDEF) Memo dated 30 Oct 2002, the Operational Requirements Document (ORD) will be replaced by the Capabilities Development Document (CDD) at MS B and the Capabilities Production Document (CPD) at Milestone (MS) C. Current approved ORDs will continue to be valid.

**WHO** – CNO, OPNAV Sponsor, CJCS, JROC, PM

**WHAT** – The MNS is a non-system-specific statement of operational capability need written in broad operational terms. Pre-system acquisition is composed of on-going activities in development of user needs, activities in science and technology, and in concept development work specifically related to the development of a materiel solution to an identified, validated need.

### Mission Need Statement

1. Defense Planning Guidance Element
2. Mission and Threat Analysis
3. Nonmaterial Alternatives
4. Potential Material Alternative
5. Constraints
6. Joint Potential Designator

The MNS shown above is described here.

**1. Defense Planning Guidance Element.** Identifies the major program planning objective or section of the Defense Planning Guidance to which this need responds.

Also references the Joint Intelligence Guidance, DOD Strategic Plan (Quadrennial Defense Review), and Military Department long-range investment plans, if applicable.

**2. *Mission and Threat Analyses.*** Identifies and describes the mission need or deficiency. Defines the need in terms of mission, objectives, and general capabilities. Does not discuss the need in terms of equipment or system-specific performance characteristics. Discusses the Defense Intelligence Agency-validated threat to be countered as well as the projected threat environment and the shortfalls of existing capabilities or systems in meeting these threats. Comments on the timing of the need and the general priority of this need relative to others in this mission area.

**3. *Non-material Alternatives.*** Discusses the results of the mission needs analysis. Identifies any changes in US or allied doctrine, operational concepts, tactics, organization, and training that were considered in the context of satisfying the deficiency. Describes why such changes were judged to be inadequate.

**4. *Potential Materiel Alternatives.*** Identifies known systems or programs addressing similar needs that are deployed or are in development or production by any of the services, agencies, or allied nations. Discusses the potential for inter-Service or allied cooperation. Indicate potential areas of study for concept exploration, including the use of existing US or allied military or commercial systems, including modified commercial systems or product improvements of existing systems. Does not evaluate these alternatives.

**5. *Constraints.*** Describes, as applicable, key boundary conditions related to infrastructure support that may have an impact on satisfying the need: available facilities; logistics support; transportation; global geospatial information and services support; manpower, personnel, training, environmental, and occupational health constraints; spectrum supportability; command, control, communications, and intelligence interfaces; security; standardization and interoperability within DOD components, North Atlantic Treaty Organization, other allies and friendly nations, as well as US Government agencies and non-Government organizations. Addresses the operational environments (including conventional; initial nuclear weapon effects; nuclear, biological, and chemical contamination; electronic, electromagnetic and natural) in which the mission is expected to be accomplished. Defines the level of desired mission capability in these environments.

**6. *Joint Potential Designator.*** Indicates the Joint Potential Designator established through the validation process.

Identification of deficiencies and opportunities is a continuing process, and normally begins with a review of the latest National Security Policy, National Military Strategy, Defense Planning Guidance (DPG), Commander In Chief (CINC) Integrated Priority List (IPL), Joint Intelligence Guidance (if appropriate), and projected threats. This information should be incorporated into an assessment of the current and projected

capability to accomplish assigned missions. This evaluation is best accomplished by a Mission Area Analysis (MAA).

The MAA identifies capability deficiencies and the time frame that these deficiencies will exist. The MAA should use a “strategy-to-task” methodology (e.g., National Military Strategy to individual mission tasks) to identify the operational and support tasks needed to meet mission objectives. The Mission Need Analysis (MNA) evaluates identified deficiencies using a task-to-need methodology to identify mission needs. This analysis looks across DoD component boundaries for solutions with DoD databases can be utilized to search for draft and validated MNSs to ensure unnecessary duplication of effort is avoided. The process may also begin with the identification of opportunities to exploit technology breakthroughs that provide new capabilities that address established needs, reduce ownership costs, or improve the effectiveness of current equipment and systems. Mission needs analysis should identify the time-based nature of the need and identify the specific time frame the need is expected to exist. If the need is to meet a current operational deficiency, the MNA should state so. If the timing of the need is based on future threats or other activities (such as the planned retirement of an existing capability), these should be identified.

**Non-material Solutions.** Non-material solutions include changes in Doctrine, Organization, Training, Leadership, and Personnel (DOTLP). If the need can be fulfilled by a non-material solution, the sponsor should refer it to the appropriate DOD component for action.

**Materiel Solutions.** If the MNA determines that a materiel solution should be pursued, the deficiencies or technological opportunities should be translated into an MNS expressed in broad operational terms. When a material solution is pursued, non-material DOTLP changes will be required to support the program through development and fielding.

**Joint Mission Area Analysis and Mission Need Analysis.** During the MAA and MNA processes, if initial analysis indicates potential impact to the joint community, the appropriate DOD components must be involved.

**WHY –** MNS are prepared for needs that develop into warfighter’s operational requirements that could result in new defense acquisition programs.

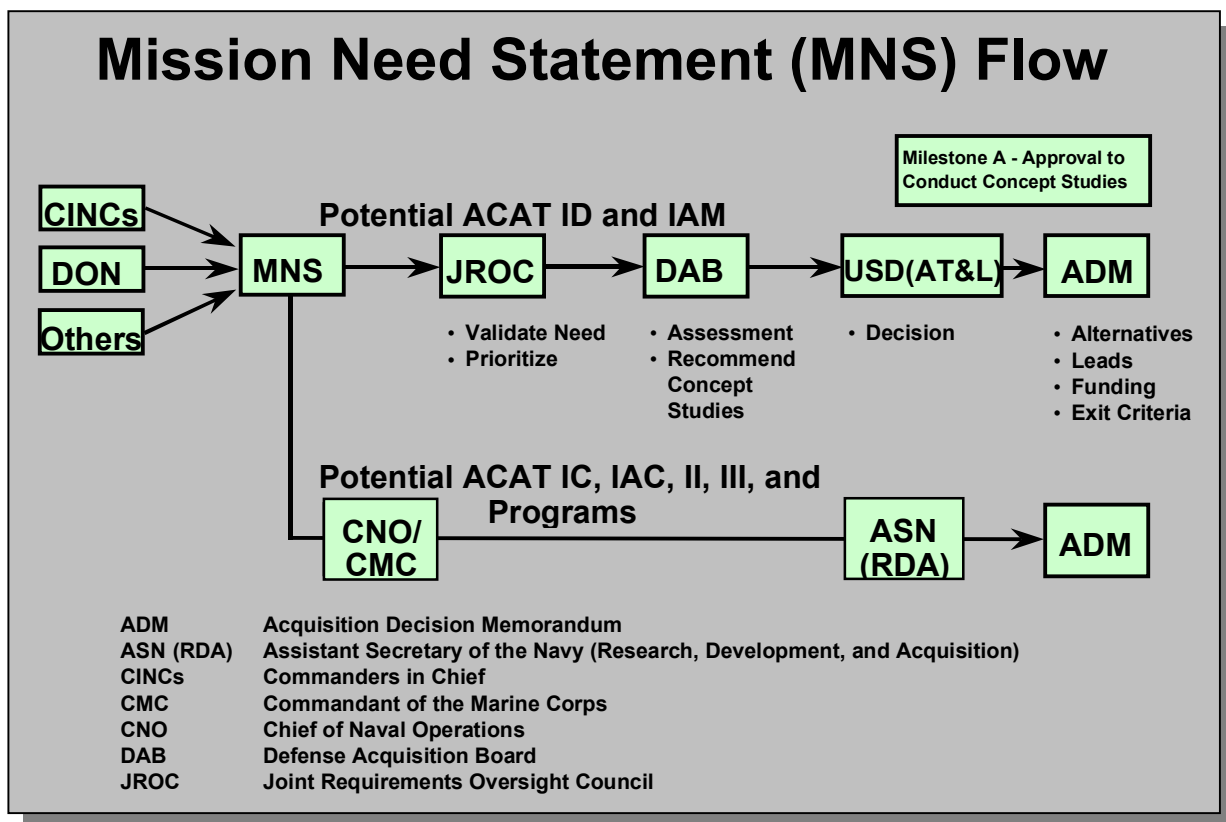
**WHEN – When** a DoD Component (Navy, USMC, Air Force, Army) has determined that a material solution should be pursued, a MNS will be prepared. Before Milestone A.

**WHERE - DoD** Components (OPNAV N-78, HQMC), (before forwarding to the validation authority for formal review and coordination.)

**HOW -** The MNS originator identifies what potential ACAT level the program may result in and whether it is a potential MDAP or Major Automated Information System

(MAIS). The document should use the format shown above and be no longer than five pages. The Figure below provides the MNS process.

Validation of a MNS confirms that the mission need exists and cannot be satisfied by a non-material solution. JROC validation begins with the formal review of the document for all potential ACAT I/IA and identified JROC special-interest MNSs. The sponsor provides an executive summary that describes the analysis process used to develop the draft document. DoD component heads validate their own potential ACAT II and below MNSs not identified as JROC special interest or statement of need as identified through analysis and documented in the product of the MNA. The MNS sponsor assesses the joint potential for the MNSs as part of the initial validation process by coordinating the MNS with the services.



The approval authority for all potential ACAT I/IA and identified JROC special interest MNSs is the JROC. The approved MNS and appropriate recommendations are forwarded for consideration during the Defense Acquisition Board (DAB) or to Assistant Secretary of Defense (ASD) Command, Control, Communications, and Intelligence) (C3I) for consideration during the DoD Chief Information Officer (CIO) review. The JROC determine whether Certified, Ready for Design (CRD) development is appropriate when they approve the MNS. The approval authority for potential ACAT II and below MNSs is the Chief/Director of a DoD component who will forward the MNS to the component acquisition authority.

Joint programs require the designation of a lead DoD component by the Milestone Decision Authority (MDA). The MDA makes the decision based on the recommendation of the JROC for potential MDAP and MAIS programs or of the Chief/Head of the DoD component for all other programs. A DoD agency may be designated as lead component.

**APML ROLE –**

- No specific action or responsibility unless requested.
- Awareness of the MNS requirement and it's basis to identify needs for a described mission deficiency by a DoD Component.
- Aware that the needs described in the MNS translate into user operational requirements as stated in the ORD.
- The ORD requirements are the basis for the material solution and the life cycle support program that evolves.

**POC –** DoD Component (warfighter / sponsor)

**REF –** DoD 5000.xxx, CJCSI3170.01B Requirements Generation System

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center



<http://www.deskbook.osd.mil/>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System



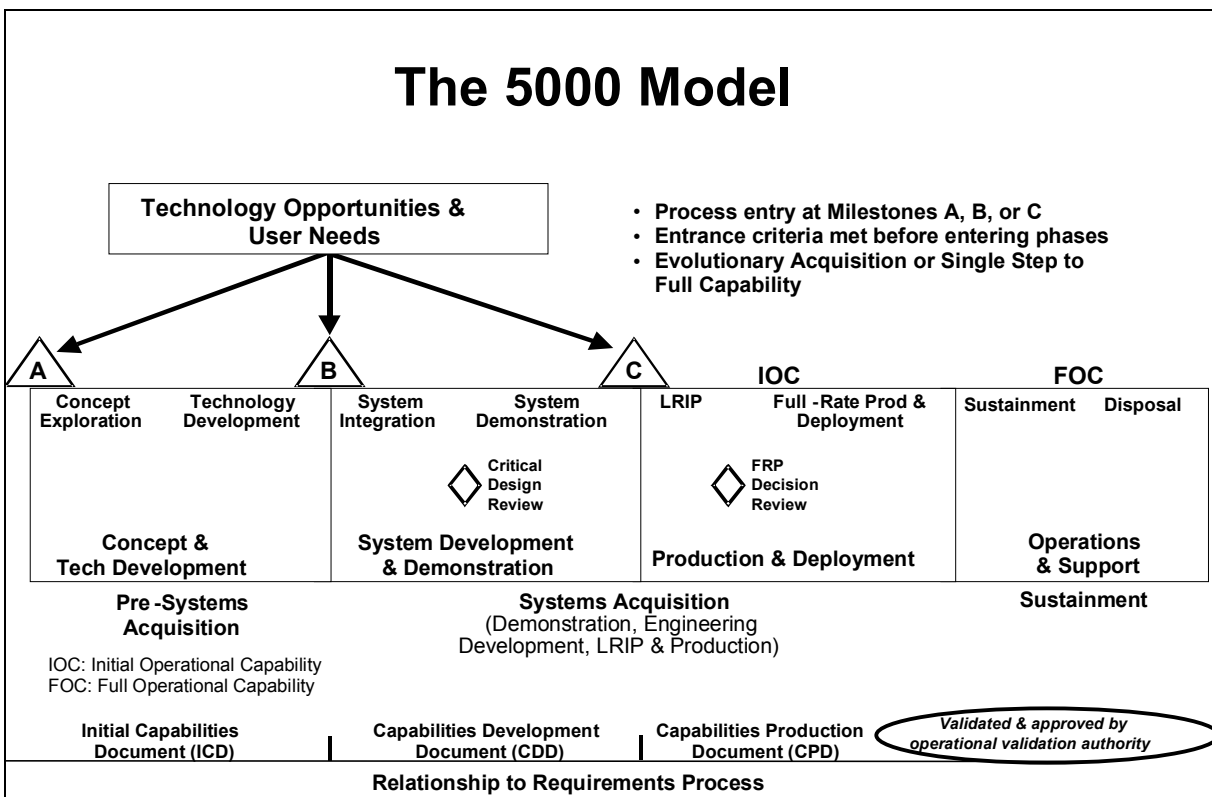
## B-6 - DoD 5000 MODEL

## DoD 5000 Acquisition Model

Concept & Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Concept Exploration    Technology Development	 Critical Design Review	LRIP/OT&E  FRP Decision Review	

**WHO** – Milestone Decision Authority (MDA)

**WHAT** – Defense Acquisition Management Framework for translating mission needs and technological opportunities, based on validated mission needs and requirements, into stable, affordable, and well-managed acquisition programs that include weapon systems and automated information systems



**WHY** – Mandatory

**WHEN** – Throughout the acquisition life cycle process

**WHERE** – DoD Components (OPNAV N-78, HQMC), CAE, NAVAIR, PEO, PM, IPT, Prime Contractor

**HOW** – DEPSECDEF Interim Guidance, dtd 30 October 2002 for Operation Of the Defense Acquisition System.

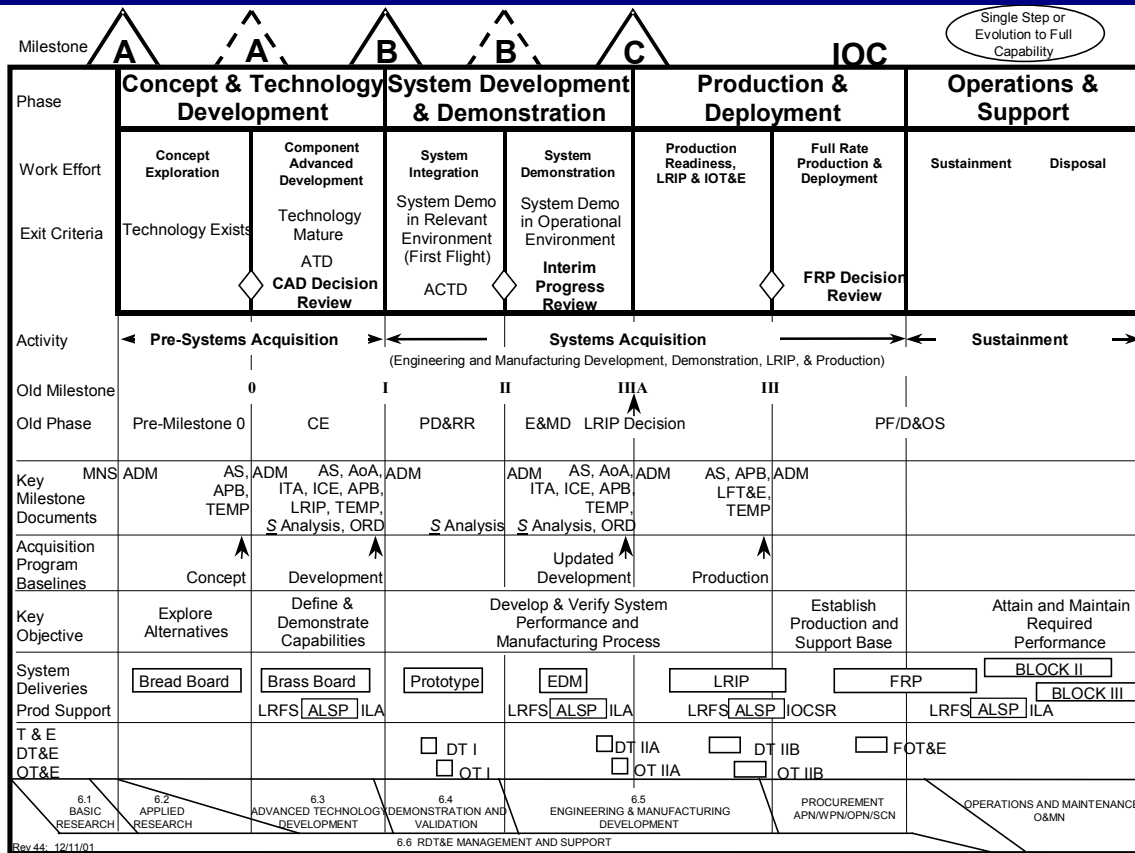
The Defense Acquisition Policy Working Group (DAPWG) developed a new acquisition process model that has provided significant changes to DoD 5000 acquisition policy and procedures. This major effort revisited some of the decisions made during Acquisition Reform and provided increased emphasis on S Analysis requirements. The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)) directed the new DoD 5000 series be implemented on June 10, 2001 and issued on April 5, 2002. This policy has been recently revised and provided in DEPSECDEF Interim Guidance, dtd 30 October 2002 for Operation Of the Defense Acquisition System.

One of the central aspects of the new DoD 5000 series of instructions is an acquisition model that accommodates time-phased requirements. The model has been tested against a variety of program types, from the smallest systems to major ship acquisition programs. Many of the details of the acquisition model were addressed in DoD 5000.2-R that was released on April 5, 2002 (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002). One feature of this model is that programs will not be initiated without a firm understanding of the technology required for the program solution. This results in the increased use of demonstration programs, much like Advanced Concept Technology Demonstration (ACTDs), to demonstrate the readiness of technology being incorporated into a new acquisition program. Other features of this model include evolutionary acquisition with a block approach, where the initial block satisfies core requirements, and future blocks incorporate evolving capability as system requirements and technical solutions become better defined.

Key Focus Areas include:

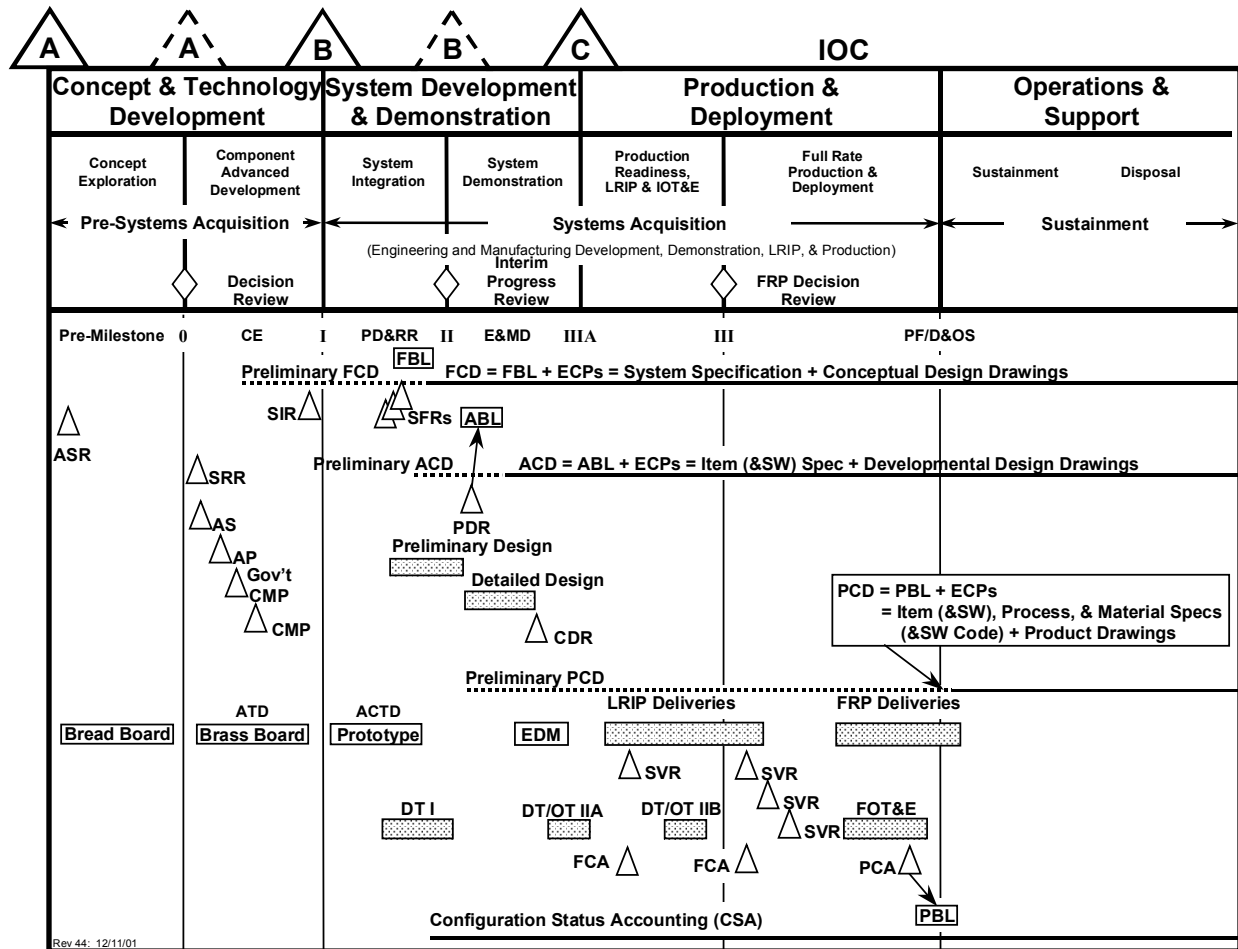
- Implementing time-phased requirements and evolutionary acquisition.
- Strengthening focus on modular, open-systems design.
- Strengthening implementation of supporting tools.
- Integrating test and evaluation.
- Enhancing management to of interoperability and system-of-systems issues.
- Integrating acquisition and logistics.

# THE 5000 MODEL



Major objectives to be codified in the new DoD 5000 series include:

- Developing an acquisition model that reduces cost and cycle time while delivering improved performance. The acquisition model no longer allows programs to be initiated without a firm understanding of the technical solution and the readiness of the technology to be incorporated into the new acquisition program.
- Moving DoD closer to commercial-style approach.
- Further streamlining the acquisition process.
- MS A: Analyze concepts
- MS B: Begin development
- MS C: Commitment to rapid acquisition



Multiple entry points possible depending on technical maturity

- Three basic options at each decision point:
  1. Proceed into next phase;
  2. Do additional work;
  3. Terminate effort
- Reviews are in-phase decision/progress points held as necessary

Milestone C Exit Criteria

- ☒ Demonstrated system
- ☒ Approved ORD & assured interoperability
- ☒ Affordability assessment
- ☒ Strategy in place for evolutionary approach, production readiness, and supportability

Concept Exploration

- Paper studies of alternative concepts for meeting a mission
- Exit criteria: Specific concept to be pursued & technology exists.

Component Advanced Development

- Development of subsystems that must be demonstrated before integration into a system
- Concept technology demonstration of new system concepts
- Exit criteria: System architecture & technology mature.

System Integration

- System integration of demonstrated subsystems and components
- Reduction of integration risk
- Exit criterion: System demonstration in a relevant environment (e.g., first flight).

System Demonstration

- Complete development
- Demo engineering development models
- Combined Developmental and Operational Testing (DT/OT)
- Exit criterion: System demonstration in an operational environment.

LRIP

- IOT&E, Live Fire Test and Evaluation (LFT&E) of prod-rep articles
- Create manufacturing capability
- LRIP
- Exit criterion: Beyond-LRIP report.

Rate Prod & Deployment

- Full rate production
- Deployment of system

**A New Approach**

- Multiple process paths - not just one way of entering the acquisition process
- Evolutionary acquisition is the preferred approach
- Focus on technology demonstration and risk reduction prior to program commitment
- Timing of funding commitment and program initiation varies with maturity of technology and concept
- Flexible, time-phased requirements facilitate CAIV trades
- Rigorous exit criteria before program commitment
- Only three potential milestone points:
  - a. (Concept and Technology Development)
  - b. (System Development and Demonstration), and
  - c. (Commitment to Production)

**APML ROLE –**

- Integrate product support considerations into system and equipment design.
- Develop product support requirements that are related consistently to readiness objectives, to design, and to each other.
- Acquire required products support.
- Provide sustained product support during Deployment and the Operations and Support phase until removal from service or disposal.

**POC – PMA, PEO (L)****REF –**

DEPSECDEF Memo dtd 30 October 2002 – Provides interim guidance for 5000 Series policy

Product Support Fundamentals Training Guide

**LINK –**

<http://dod5000.dau.mil/>

New 5000 Resource Center

<http://deskbook.dau.mil/>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<http://www.deskbook.osd.mil/>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

## B-7 - OPERATIONAL REQUIREMENTS DOCUMENT (ORD)

<b>OPERATIONAL REQUIREMENTS DOCUMENT</b>	
FOR	
TITLE	
ACAT _____	
Prepared for Milestone Decision	
	Date
1. General Description of Operational Capability	
2. Threat	
3. Shortcomings of Existing Systems and C4ISR Architectures	
4. Capabilities Required	
ORD Key Performance Parameters (KPPs)	
a. System Performance	
b. Information Exchange Requirements	
c. Logistics and Readiness	
d. Environmental, Safety and Occupational Health (ESOH) and Other System Characteristics	
5. Program Support	
a. Maintenance Planning	
b. Support Equipment	
c. C4I/Standardization, Interoperability, and Commonality	
d. Computer Resources	
e. Human Systems Integration	
f. Other Logistics and Facilities Considerations	
g. Transportation and Basing	
h. Geospatial Information and Services	
i. Natural Environmental Support	
6. Force Structure	
7. Schedule	
8. Program Affordability	
Appendixes	
A - References	
B - Distribution List	
C - List of ORD supporting analysis	
D - CRDs	
Glossary	
Part I -- Abbreviations and Acronyms	
Part II -- Terms and Definitions	
Tables	
A -- ORD KPP summary	
B -- Information Exchange Requirements Matrix	

### NOTE:

IAW the DEPSEDEF Memo dated 30 Oct 2002, and the pending revision to the CJCSI 3170.01B, the ORD will be replaced by the CDD for MS B and the CPD at MS C. Current approved ORDs continue to be valid.

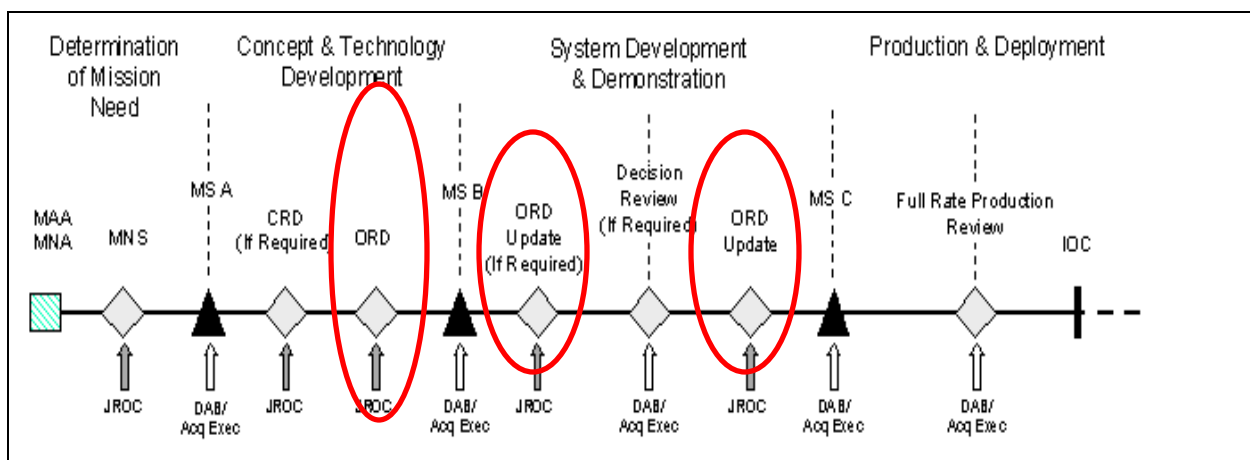
**WHO** – CNO, ORD Sponsor (OPNAV N-78, HQMC), PEO, PM, IPTs

**WHAT** – The ORD is a formatted document containing operational performance requirements for a proposed concept or system.

**WHY** – To provide guidance to acquisition officials and the acquisition team by providing:

- General Description of Operational Capability required
- Summarize the threat to be countered
- State shortcomings of existing systems and C4ISR architectures
- System Performance required
- Information Exchange Requirements
- Logistics and Readiness and other factors

**WHEN** – The ORD is rarely required before program initiation, Milestone B, per figure below. However, a draft ORD could be developed as early as Milestone A, based on the maturity of the selected concept technology. The ORD once approved, will remain as the user's basic requirements. ORD updates that occur throughout the acquisition life cycle due to changes including, evolutionary changes planned over the life of the program will be staffed and approved.



**WHERE** - DoD Components (OPNAV-N78, HQMC), NAVAIR

**HOW** -The system proposed for continued evaluation in later acquisition phases is described in an initial ORD in terms that define the system capabilities needed to satisfy the mission need. The requirements, stated as operational performance parameters in



the initial ORD are tailored to the system (e.g., satellite, aircraft, ship, missile, or weapon) and reflect system-level performance capabilities such as range, probability of kill, platform survivability, and the timing of the need. Sections of the ORD are described below.

### **1. General Description of Operational Capability**

- Summarizes the mission need. (If a documented MNS did not precede the ORD, explain the process that investigated alternatives for satisfying mission need).
- Describes the overall mission area.
- Identify CRD the proposed system falls under (if appropriate).
- Describes the proposed system.
- Describes the analysis that supports the proposed system.
- Define the missions that the proposed system will be tasked to accomplish.
- Describes the operations and support concepts summarizing the system's place on the future battlefield, its employment/operation, its organizational setting, and its sustaining and support interfaces.
- Describes the C4ISR (information exchange) operational concept.
- Describes the benefits of Evolutionary Acquisition for the proposed system (if appropriate). Requirements should be specified in terms of reasonable increments of capability described in the timeframes that will support an evolutionary acquisition approach. The requirements must be time-based with the initial capability targeted for a 6-year IOC from program initiation. Requirements beyond the initial IOC must be specified in a time-phased manner and be matched to projected threats. Only those initial requirements that can be validated by the user as needed within the FYDP should be defined for the initial acquisition. Subsequent requirements would take into account achievements in capability from preceding blocks.

**2. Threat.** Included is the projected threat environment. (Reference DIA or Service Technical Intelligence Center-approved documents. For potential MDAPs, reference the DIA-validated threat assessment.)

### **3. Shortcomings of Existing Systems and C4ISR Architectures**

- Describes why existing systems cannot meet current or projected requirements.
- Describes why existing C4ISR operational, system and technical architecture views cannot meet the requirements for the proposed system.

#### 4. **Capabilities Required**

- Identifies the operational performance parameters (capabilities and characteristics) required for the proposed system.
- Articulates the requirements in output oriented, and measurable terms. Use Threshold/Objective format, and provide criteria and rationale for each requirement. Rationale should include the mission-unique environment for the system (e.g., wartime, peacetime, transition conditions).
- Timing of requirements should specify the time-based nature of the need and the events that are driving that need.
- ORD KPPs. Develop the ORD KPPs. The figure below provides an example KPP table summary.

Key Performance Parameter	Threshold and Objective
Interoperability	Accomplishment of all critical top-level IERs (T) Accomplishment of all IERs (O)
Combat ID	"
Early Warning	"
Etc.	"

Example KPP table summary

##### **a. System Performance**

- Describes mission scenarios (wartime and peacetime, if different) in terms of mission profiles, employment tactics, countermeasures, and environmental conditions (all inclusive: natural and man-made; e.g., weather, ocean acoustics, information warfare).
- Identifies system performance parameters such as range, accuracy, payload, speed, mission reliability, interoperability, Product Support. Recommend which parameter will be considered a KPP.

##### **b. Information Exchange Requirements.**

- Identifies the top-level Information Exchange Requirements for the system for each mission area that the system is proposed to support (e.g., Contract Administrative Services (CAS), Army Acquisition Workforce (AAW), surveillance, reconnaissance).

##### **c. Logistics and Readiness**

- Includes measures for mission-capable rate, operational availability, frequency and duration of preventive or scheduled maintenance actions.

- Describes in terms of mission requirements considering both wartime and peacetime logistics operations.
- Identifies combat support requirements including battle damage repair capability, mobility requirements, expected maintenance levels, and surge and mobilization objectives and capabilities.

**d. *Environmental, Safety and Occupational Health (ESOH) and Other System Characteristics.***

- These include characteristics that tend to be design, cost and risk drivers.
- Addresses environmental, safety and occupational health considerations.
- Address Electronic Attack (EA) and Wartime Reserve Modes (WARM) requirements.
- Addresses Conventional, Initial Nuclear Weapons Effects, and Nuclear, Biological, and Chemical Contamination (NBCC) survivability.
- Addresses natural environmental factors (such as climatic, terrain, and oceanographic factors).
- Addresses unplanned stimuli (such as fast cook-off, bullet impact, and sympathetic detonation).
- Addresses safety issues regarding Hazards of Electromagnetic Radiation to Ordnance (HERO).
- Defines the expected mission capability (e.g., full, percent degraded) in the various environments. Include applicable safety parameters such as those related to system, nuclear, explosive, and flight safety.
- Identifies physical and operational security needs.
- Addresses Electromagnetic Environmental Effects (E3) and Spectrum Supportability for systems and equipment.

**5. *Program Support.***

- Establishes **support objectives** for initial and full operational capability.
- Discusses interfacing systems (at the system, subsystem, platform, and force levels), specifically those related to command, control, communications, computers, and intelligence (C4I); transportation and basing; and standardization and interoperability.

- Assigns a joint potential designation (joint, joint interest, or independent).

**a. Maintenance Planning.**

- Identifies maintenance tasks to be accomplished and time phasing for all levels of maintenance.
- Includes programmed maintenance and surveillance inspections such as nuclear hardness and structural integrity.
- Describes the envisioned planning approach for contract versus organic repair.

**b. Support Equipment.**

- Defines the standard support equipment to be used by the system.
- Describes the test and fault isolation capabilities desired of automatic test equipment at all levels, expressed in terms of realistic and affordable probabilities and confidence levels.

**c. C4I/Standardization, Interoperability, and Commonality**

- Describes how the system will be integrated into the command, control, communications, computers, and intelligence architecture that is forecast to exist at the time the system will be fielded. Include impact on current and planned C4ISR infrastructure, including methodology for assessment.
- Identifies data and data fusion requirements (data, voice, video), computer network support, and anti-jam requirements.
- Identifies unique intelligence information requirements, including intelligence interfaces, communications, and data base support pertaining to target and mission planning activities, threat data.
- Describes considerations for joint use, NATO cross-servicing.
- Identifies procedural and technical interfaces, and communications, protocols, and standards required to be incorporated to ensure compatibility and interoperability with other Service, joint Service, NATO, and other allied and friendly nation systems.
- The system must comply with applicable information technology standards contained in the DOD Joint Technical Architecture (JTA).
- Addresses interface requirements with Global Command and Control System (GCCS) or Community Of Practice (COP).

- Addresses IA that cover the defensive capabilities that provide for the availability, integrity, authentication, confidentiality, and nonrepudiation of the information to be exchanged and used. IA should also include those characteristics needed for restoration through protection, detection, and reaction capabilities. To balance risks and gains, IA and Information Interoperability characteristics must be codeveloped and coevolved. This includes implementation of Public Key Infrastructure (PKI) required to ensure information security over all voice, video, and data transmission. Interconnection of systems operating at different classification levels will be accomplished by processes (e.g., SECRET And Below Interoperability (SABI)) that have been approved by the DOD CIO (references h and i).
- Addresses energy standardization and efficiency needs for both fuels and electrical power as applicable.

**d. Computer Resources**

- Identifies computer resource constraints (examples include language, computer, database, architecture, or interoperability constraints).
- Addresses all mission-critical and support computer resources, including automated test equipment.
- Describes the capabilities desired for integrated computer resources support.
- Identifies any unique user interface requirements, documentation needs, and special software certifications.

**e. Human Systems Integration (HSI).** Addresses HSI domains to include:

- Establishing broad manpower constraints for operators, maintainers, and support personnel.
- Identifying requirements for manpower factors that impact system design (utilization rates, pilot-to-seat ratios, and maintenance ratios).
- Establishes broad cognitive, physical, and sensory requirements for the operators, maintainers, or support personnel who contribute to, or constrain, total system performance.
- Establishes requirements for human performance that will achieve effective human-system interfaces. Identify requirements for combining, modifying, or establishing new military occupational specialties.
- Describes the training concept to include requirements for the training support package (e.g., simulators, training devices, embedded training)

and training logistics. Include safety or health and critical errors that reduce job performance or system effectiveness given the operational environment. Determine objectives and thresholds for the above requirements, as appropriate.

***f. Other Logistics and Facilities Considerations.***

- Describes the provisioning strategy for the system.
- Specifies any unique facility, shelter, supporting infrastructure, environmental compliance requirements, and associated costs and availability milestone schedules in support of the requirement.
- Identifies special packaging, handling, and transportation considerations.
- Defines unique data requirements such as engineering data for depot support and technical orders for the system and depot.

***g. Transportation and Basing.***

- Describes how the system will be moved either to or within the theater. Identify any lift constraints.
- Details the basing requirements (main and forward operating bases) and associated facilities needed for training.

***h. Geospatial Information and Services.***

- Identifies imagery, imagery intelligence, imagery-derived Mapping Agency Standard (MASINT) and geospatial information.
- Where possible, National Imagery and Mapping Agency standard military data will be used.

***i. Natural Environmental Support.***

- Identifies the standard and unique weather, oceanographic, and astrogeophysical support required.
- Includes data accuracy and forecast requirements.

**6. Force Structure.** Estimates the number of systems or subsystems needed, including spares and training units. This is only an estimate of the number of systems and subsystems needed, and will not serve as the definitive source for documenting the distribution or basis of issue. Identifies units or platforms and quantities of these platforms (including other Services or Government agencies, if appropriate) that will employ the systems or subsystems being developed and procured to satisfy this Operational Requirements Document.

**7. *Schedule.*** Defines what actions, when complete, will constitute attainment of initial and full operational capability (leave flexible for these to be revised as the program is progressively defined and trade-off studies are completed). Clearly specifies the operational capability or level of performance necessary to declare initial and full operational capability. Includes the number of operational systems, operational and support personnel, facilities, supporting infrastructure and organizational, intermediate, and depot support elements that must be in place. If availability in a specific timeframe is important, specifies an objective for initial operational capability. Describe the impact if this objective is not achieved and identify a window of acceptability if appropriate.

**8. *Program Affordability.*** Cost will be addressed in the ORD. Inclusion of cost allows the DOD component sponsor to emphasize affordability early in the proposed program. The cost figure should be stated in terms of a threshold and objective (not necessarily a KPP) in order to provide flexibility to allow for program evolution and CAIV trade studies. The DOD component sponsor may make cost a KPP if it desires and identify the cost it wishes to evaluate. The cost will be extracted from the ORD and included in the cost section of the APB.

### ***Appendixes***

- A - References
- B - Distribution List
- C - List of ORD supporting analysis
- D - CRD -ORD KPP requirements cross linkage (when CRD is applicable)

### ***Glossary***

- Part I -- Abbreviations and Acronyms
- Part II -- Terms and Definitions

### ***Tables***

- A - ORD KPP summary
- B - Information Exchange Requirements Matrix

**APML ROLE –**

- The requirements lead for the system or concept user will request logistics support in developing the ORD within the IPT process.
- In the above figure, paragraphs 4 and 5 provide the basis for the supportability requirements consideration and development.
- Lessons learned and knowledgeable sources should be sought to ensure that requirements established reflect realistic operational user expectations for the performance of the system or concept in support of user need.
- The primary source of supportability requirements evolve from prior like and similar systems and experiences encountered during subsequent phases. The specific system or concept design characteristics will ultimately evolve out of the ensuing supportability analysis effort.

**REF –** CJCSI 3170.01B, Requirements Generation System, 15 April 2001

**POC –** PM, PEO

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

[CJCSI 3170.01B REQUIREMENTS GENERATION SYSTEM 15 April 2001](#)



## APPENDIX C

# PRODUCT SUPPORT MANAGEMENT PLANNING

### Table of Contents

- C-1 – REDUCTION OF TOTAL OWNERSHIP COST (R-TOC)/AFFORDABLE READINESS
- C-2 - DEMILITARIZATION AND DISPOSAL
- C-3 – NAVAL AVIATION READINESS INTEGRATED IMPROVEMENT PROGRAM (NAVRIIP) / BOOTS ON THE GROUND (BOG)
- C-4 - DIMINISHING MANUFACTURING RESOURCES AND MATERIAL SHORTAGES (DMSMS) PROGRAM
- C-5 - FLEET SUPPORT TEAM (FST)
- C-6 - INDEPENDENT LOGISTICS ASSESSMENT (ILA)
- C-7 - INITIAL OPERATIONAL CAPABILITY SUPPORTABILITY REVIEW (IOCSR)
- C-8 – THE NAVAL AVIATION MAINTENANCE PROGRAM (NAMP)
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- C-15 - PRODUCT SUPPORT SCHEDULING
- C-16 – SITE ACTIVATION PLANS (SAP)
- C-17 – TEAM WORK PLAN (TWP)
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- C-23 – FLEET INTRODUCTION TEAM (FIT)
- C-24 - RESIDENT INTEGRATED LOGISTIC SUPPORT DETACHMENT (RILSD)

## C-1 – REDUCTION OF TOTAL OWNERSHIP COST (R-TOC)/ AFFORDABLE READINESS

**WHO** – APML, FST, Fleet, NAVICP

### **WHAT** –

**Initiative Concept** based on:

- The premise that a program team, directly or indirectly, influences Operating and Support (O&S) costs during all phases of a weapon system's life cycle.
- This influence is not derived from control of all funds related to operations and support, rather it stems from knowledge and understanding of equipment performance and costs which can lead to greater equipment reliability, modified logistics support concepts, and lower operations and support costs.
- The complexity of affordable readiness decisions, mandate extensive coordination with both the Fleet and OPNAV staff.

**The four pillars of cost that must be addressed** to significantly reduce Naval aviation's operating and support costs;

- **Inventory:** Aircraft (A/C), engines, spares, support equipment, and training devices
- **People:** military, civil service, and contractor
- **Tech data:** publications, drawing, and software
- **Infrastructure:** buildings, test equipment, and fixtures

### **NAVAIR's Affordable Readiness Program:**

- Concept of operations whereby platform/equipment/competency managers continuously seek and implement opportunities for Reduction of Total Ownership Cost (R-TOC), while sustaining the fleet readiness and safety of applicable aircraft and equipment.
- R-TOC includes all costs associated with the research, development, procurement, operation, logistic support, and disposal of an individual weapon system including the total supporting infrastructure that plans, manages, and executes that weapon system program over its full life.
- Both ASN (RD&A)'s R-TOC directive and the DOD thrust have been based upon the NAVAIR's Affordable Readiness program.
- A simplistic view is;
  - R-TOC reduction is the overall umbrella
  - Affordable Readiness is the process for implementation of Life Cycle Support/In-service programs

- Cost As an Independent Variable (CAIV) is the process for managing cost during R&D/pre-production programs.

**NAVAIR AR “Set-Aside” Process:**

- Established in 1997 to provide non-program investment funds from pertinent NAVAIR O&M, N accounts.
- One of several Cost Reduction & Effectiveness Initiatives designed to reduce or minimize the TOC of the item.
  - Initiatives are not free, they cost money to execute.
  - The payoff is to be in cost reduction, workload reduction, readiness/performance improvement, and quality of life/service enhancement.
  - The intention is that the savings from such reductions are to be reinvested in naval aviation modernization and recapitalization.

**Other Non-Program Investment Sources include:**

- Dual Use Program (DUAP)
- Commercial Operating & Support Savings Initiative (COSSI)
- Small Business Innovation Research (SBIR)
- Aircraft Equipment R&M Improvement Program (AERMIP)
- Component Improvement Program (CIP)
- Operational Safety Improvement Program (OSIP)
- Repair In Lieu Of Procurement (RILOP)
- Logistics Engineering Change Proposals (LECPs)
- ASN (RD&A), Cost Reduction & Effectiveness Improvement (CR&EI)

NAVAIR has begun to migrate to a single annual call for Cost Reduction Improvement Initiatives (CREI) due to the burden these put on the program teams and competencies to develop, brief, and defend initiatives through evaluation process several times a year.

**WHY –**

- DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002) requires component sponsors to emphasize affordability early in the proposed program.
- ASN (RD&A) memo of 5 May 1998, subj: “Implementation of Total Ownership Cost (TOC) Baselines in the Department of the Navy”
- NAVAIR 1.0 Memo of 31 July 1998, subj: “Implementation of Total Ownership Cost Baselines in the Naval Air Systems Command”
  - Are the current Department of the Navy (DoN) and NAVAIR guidance requiring ACAT I-IV programs develop plans for reducing TOC over the program life cycle.

- The current NAVAIR guidance allows for in-service programs to update and use their existing Affordable Readiness Plans to serve as the required TOC Reduction Plan.

**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, IPTs, FST, Fleet, Prime Contractor

**HOW** – Detail program guidelines and guidebooks are available on the 3.0 “TOOL BOX” website including Background, CREI information, latest budget initiatives, Presentations and POCs.

**APML ROLE –**

- Awareness of the R-TOC initiatives and the application to the system program for the applicable phase or throughout the system life cycle
- Ensure support team and IPT members are aware of the requirements for R-TOC
- Initiate requirements to establish Aircraft Readiness (AR) planning and integrate R-TOC initiatives in support program
- Implement R-TOC planning and execute initiatives when approval and funding are available

Things you can accomplish for new programs:

- Specify AR/R-TOC and cost performance parameters in top-level program documents.
- Establish an AR/R-TOC IPT and specify participation by the contractor and other industry representatives as necessary.
- Require the offeror to implement AR/R-TOC as a part of the system engineering process.
- Include AR/R-TOC as a top-level, source-selection discriminator in Sections L and M of the RFP.
- Require the prime contractor to include R-TOC as a selection consideration in purchase orders and other procurement vehicles to vendors.
- Require the offeror to establish a systematic process for allocating R-TOC goals during the design process and to assign metrics.
- Require the contractor to identify and allocate cost drivers to design elements.

- Require the offeror to establish a R-TOC baseline and place it under configuration control.

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.2			(301) 342-8260
AIR-4.2.5			(301) 342-0256
AIR-3.6			(301) 757-8782/8789

AIR-4.2 is responsible for developing CAIV processes and for educating and assisting program teams with their responsibilities with respect to CAIV.

AIR-4.2.5 is the owner of the cost estimating guidebook and will assist programs in the preparation and evaluation of maintenance alternative cost analyses in a structured methodology.

AIR-3.6 has developed a total cost work breakdown structure (WBS) to assist program teams with tracking and understanding total cost.

## REF –

NAVAIR TOC Guidebook

Trade Cost Guidebook

VAMOSC (Visibility And Management of Operating and Support Cost) system managed and operated by the Naval Center For Cost Analysis (NCCA)

DoD Deskbook

## LINKS -

<https://www.nalda.navy.mil/3.6/coo/>

Affordable Readiness/ R-TOC

<https://www.nalda.navy.mil/initiatives.html>

Logistics Tool Box

## C-2 DEMILITARIZATION AND DISPOSAL

**WHO – OPNAV**, APML, NAVICP, DLA

**WHAT –**

- **Demilitarization:** is the act of destroying the military offensive or defensive advantages inherent in certain types of equipment or material. The term encompasses mutilation, scrapping, melting, burning, or alteration designed to prevent the further use of this equipment and material for its originally intended military or lethal purpose and applies equally to material in unserviceable or serviceable condition, that has been screened through the Inventory Control Point (ICP) and declared Excess, Surplus, and Foreign Excess.
- **Disposal:** is the process of redistributing, transferring, donating, selling, abandoning, or destroying disposable personal property. Extreme care must be exercised in the disposal of property that is dangerous to public health and safety. All property with sales value only for its basic material content will be rendered innocuous before it is sold.

**WHY –** In accordance with DoD and SECNAV guidance each acquisition program is required to develop a plan as part of the logistics documentation that addresses Demilitarization and Disposal of the weapon system at the end of the useful life.

**WHEN –** Demilitarization and disposal of an entire weapon system normally occurs at the end of Milestone C, "Production/Deployment, and Operational Support/Disposal".

Demilitarization and disposal of subsystems, equipment, components, and parts, however, may be required and conducted throughout a weapon system's life cycle.

Subsystems, equipment, components, and parts are removed and replaced because of obsolescence, failures, changes, or improvements. These items, once removed, may be remanufactured, repaired, reused, refurbished or demilitarized and disposed at the organizational, intermediate, or depot level maintenance activity.

**WHERE –** NAVICP (Functional Manager), the Aerospace Maintenance and Regeneration Center (AMARC) at Davis Monthan AFB in Arizona (the demilitarization and disposal activity).

**HOW** - Establish an IPT following a decision to retire or deactivate a Type Model Series (TMS) with N880, and NAVICP

- Develop an implementation plan tailored to the specific TMS
- Address disposition of the hardware and documentation
- In addition the plan will contain information on the aircraft, all support equipment and trainers.
- For each component within a system, the plan needs item identification, basic function, composition, disassembly and demilitarization instructions, safety instructions, and environmental considerations.
- If an active TMS was involved, force structure implications would require additional activities beyond hardware disposition. The following checklist will aid in identifying demilitarization and disposal activities at each phase:

**Milestone A:**

- Demilitarization and Disposal (D&D) Strategy – describe approach
- Consult with DoD Demilitarization Logistics Manager
- See Demilitarization and Disposal Plan Guidelines
- D&D issues and concerns
- Design for demilitarization
- D&D costs to be included in Total Ownership Cost (TOC) estimate

**Decision Review (DR):**

- D&D Strategy – identify requirements
- Consult with DoD Demilitarization Logistics Manager
- See Demilitarization and Disposal Plan Guidelines
- D&D coding and instructions
- Coordinate with Defense Logistics Information Services (DLIS)
- Review/update D&D costs in TOC estimate

**Milestone B:**

- D&D Strategy to be included in System Engineering Management Plan (SEMP)
- Consult with DoD Demilitarization Logistics Manager
- See Demilitarization and Disposal Plan Guidelines
- Review/revise demilitarization coding, as necessary
- Coordinate with DLIS
- Review/update D&D costs in TOC estimate

**Interim Progress Review (IPR):**

- Review/update D&D Strategy
- Review/update D&D costs in TOC estimate

**Milestone C:**

- Review/update D&D Strategy
- Review/revise demilitarization coding as needed
- Detailed instructions
- Include technical data package to perform demilitarization process
- Review/update D&D costs in TOC estimate

**Full Rate Production Decision Review (FRPDR):**

- Review/update D&D Strategy
- Review/revise demilitarization coding as needed
- Update technical data package
- Review/update D&D costs in TOC estimate

**Sustainment:**

- Review/update D&D Strategy
- Review/revise demilitarization coding as needed
- Execute D&D activities
- Coordinate with local Defense Reutilization and Marketing Office (DRMO) and/or HQ DRMS
- Review/update D&D costs in TOC estimate

**Disposal:**

- DRMO executes D&D Strategy

**APML ROLE –**

- Be aware the cognizant activities are Defense Logistics Agency (DLA), NAVICP, and OPNAV N880
- Initiate required activities to execute the process based on type of user request



**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2	SME	NAVAIR HQ	(301) 757-8233

**REF –** DEPSECDEF Memo dtd 30 October 2002 – Provides interim guidance for 5000 Series policy, DoD 4160.21-M-1, DoD 4140.1-R

**LINKS –**

<http://dod5000.dau.mil/>

DoD 5000 Resource Center

[http://www.drms.dla.mil/newrtd/html/demil\\_codes.html](http://www.drms.dla.mil/newrtd/html/demil_codes.html)

Link to DEMIL Codes at the Demilitarization Coding Management Office (DCMO)

<http://classic.deskbook.osd.mil/data/006DM001DOC.DOC>

DoD 4160.21-M; Defense Materiel Disposition Manual; August 1997 (formerly Defense Demilitarization Manual) provides DoD level demilitarization and disposition requirements.

<http://classic.deskbook.osd.mil/appfiles/MODL0274.DOC>

Word template of Suggested Format for Programmatic ESOH Evaluation (PESHE) Outline

<http://classic.deskbook.osd.mil/data/004PRDOC.DOC>

Demilitarization/Disposition Requirements Relating to the Design of New or Modification of Ammunition Items

## **C-3 - NAVAL AVIATION READINESS INTEGRATED IMPROVEMENT PROGRAM (NAVRIP) / BOOTS ON THE GROUND (BOG)**

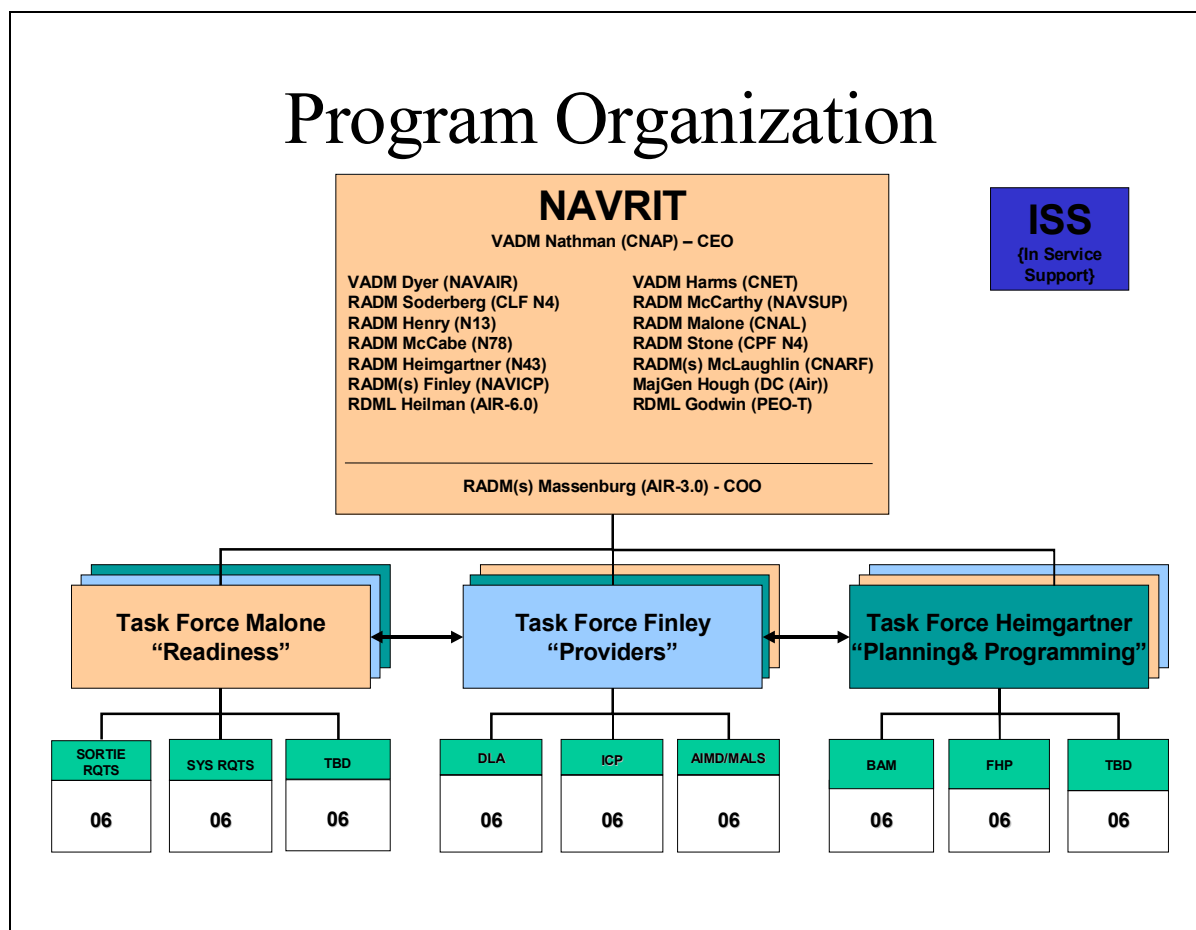
**WHO** – CNO, CNP, CNET, AIRPAC, AIRLANT, TYCOMs, WINGs, NAVAIR, NAVSUP, NAVICP, DLA, PM Offices, FSTs, IPTs

**WHAT** – The Navy implemented the Naval Aviation Readiness Integrated Improvement Program (NAVRIP) to increase non-deployed readiness of aviation squadrons throughout the Inter-Deployment Training Cycle (IDTC). The program, led by flag officers from 17 commands including NAVAIR, Pacific Fleet, Atlantic Fleet, AIRPAC, Naval Air Force Atlantic Fleet, Chief of Naval Education and Training, Naval Supply Systems Command, Naval Inventory Control Point and the Defense Logistics Agency, intends to reach and sustain non-deployed aviation readiness goals. The main objectives of this program are to:

- Attain and sustain near & long-term non-deployed aviation readiness goals. “Operationalize” AMSR. Balance and align interactions between O- and I-Level maintenance and interactions with and dependencies upon NAVICP, DLA and the Depots. Balance ILS items for the greatest positive impact to meet readiness goals.
- Integrate, align and focus readiness initiatives and organizations to accelerate readiness improvements.

A critical part of NAVRIP are the Naval Aviation Readiness Improvement Team (NAVRIT) and the "Boots on the Ground" teams, comprised of maintainers and suppliers from the Type Commands, NAVAIR, program offices, NAVICP, and DLA that will visit air stations to meet with troops maintaining and supporting the aircraft. BOG visits at NAS Whidbey Island, Wash., and NAS Oceana in Virginia Beach, Va., enabled fleet aviators and maintainers to provide input to flag officers on readiness issues. The Thomas Group, a consulting company with expertise in process management, is assisting the Navy in addressing the fundamental change needed in Naval aviation business processes to improve non-deployed readiness. The Thomas Group will work with the Navy throughout the NAVRIP process. As problems are brought to leadership's attention through the Boots On the Ground (BOGs), steps will be taken immediately to change the process, working toward solving those problems consistently over time and ultimately eliminating barriers that make the process less efficient. The key is to improve the process.

# Program Organization



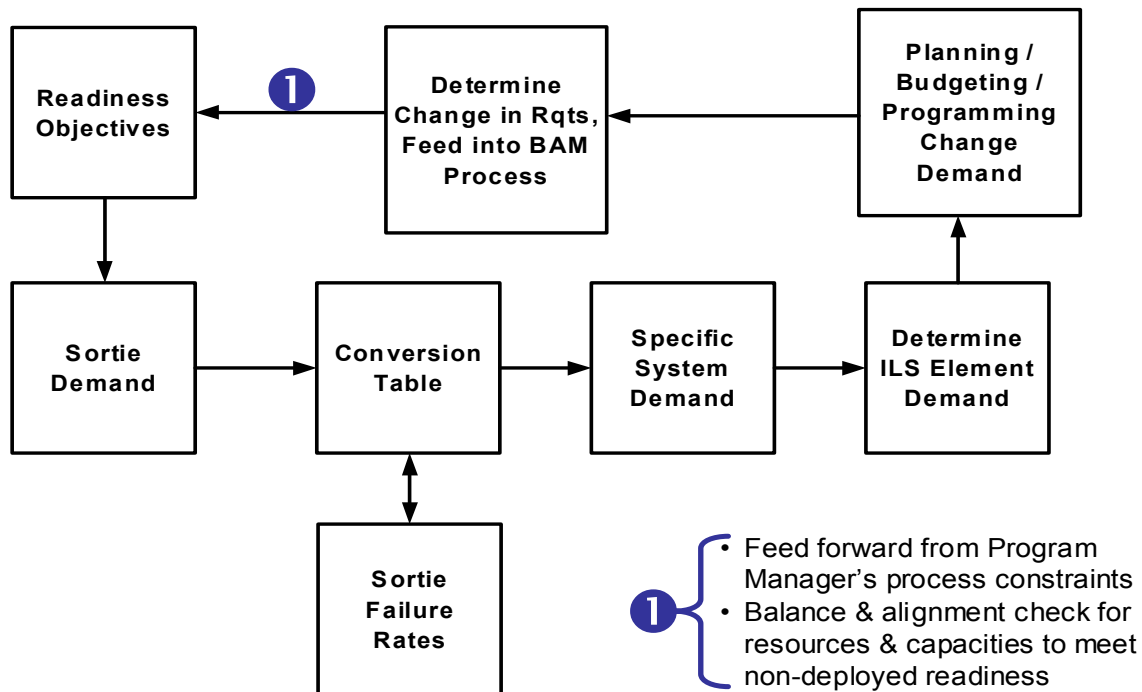
An important element in the streamlining process will be balancing and aligning efforts between different supporting commands, such as the fleet, NAVICP, DLA and the maintenance depots. Three cross-functional teams within the NAVRIT address the more difficult challenges.

Cross Functional Team 1 defines appropriate, acceptable levels of readiness throughout the IDTC and then builds a training and readiness matrix tailored for each airframe. The team works with type-wings to schedule and conduct squadron training

Cross Functional Team 2, co-chaired by NAVICP and NAVAIR, is called the "Providers." They are responsible for providing parts, people, aircraft and support equipment to squadrons through NAVSUP, DLA, NPC and NAVAIR at the right time, with the right quality so the warfighters can continue to meet critical training milestones on time.

A crucial piece of this effort is determining and attaining an appropriate level of funding. Cross Functional Team 3, is responsible for planning and programming to ensure that funding requirements are met.

## The Readiness Process



**WHY** – In recent years there has been increasing dissatisfaction with the costs and conduct of Naval aviation maintenance and supply support by suppliers, providers, and customers.

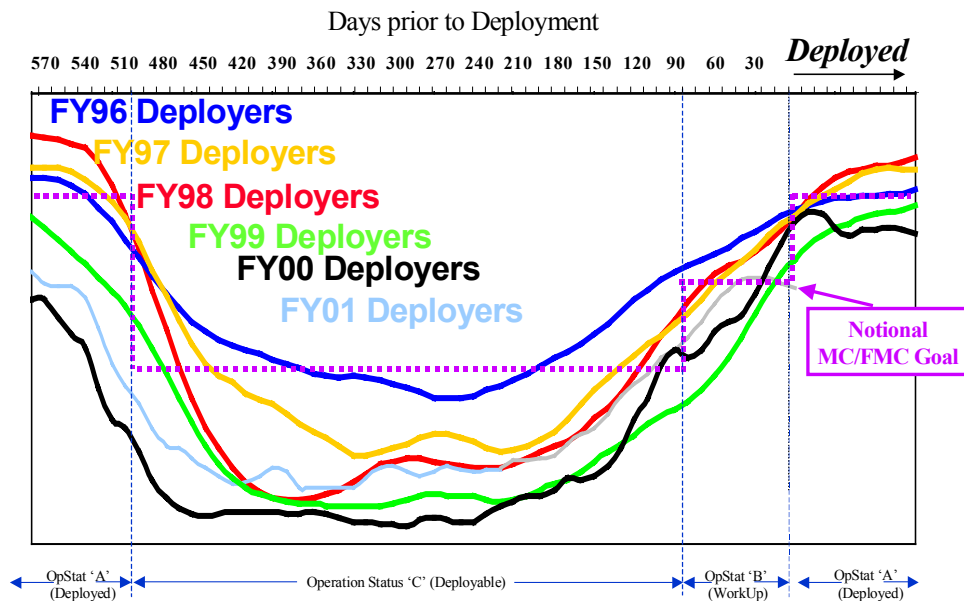
The warfighter's post deployment readiness decline has been steeper and has remained at a lower than expected level for a longer period of time, thus requiring more resources and effort to build back up in preparation for the next deployment. The resulting "non-deployed aircraft readiness", (which is depicted in the figure below), shows how air wings performed during their IDTC for FY 96 to FY01 deployers.

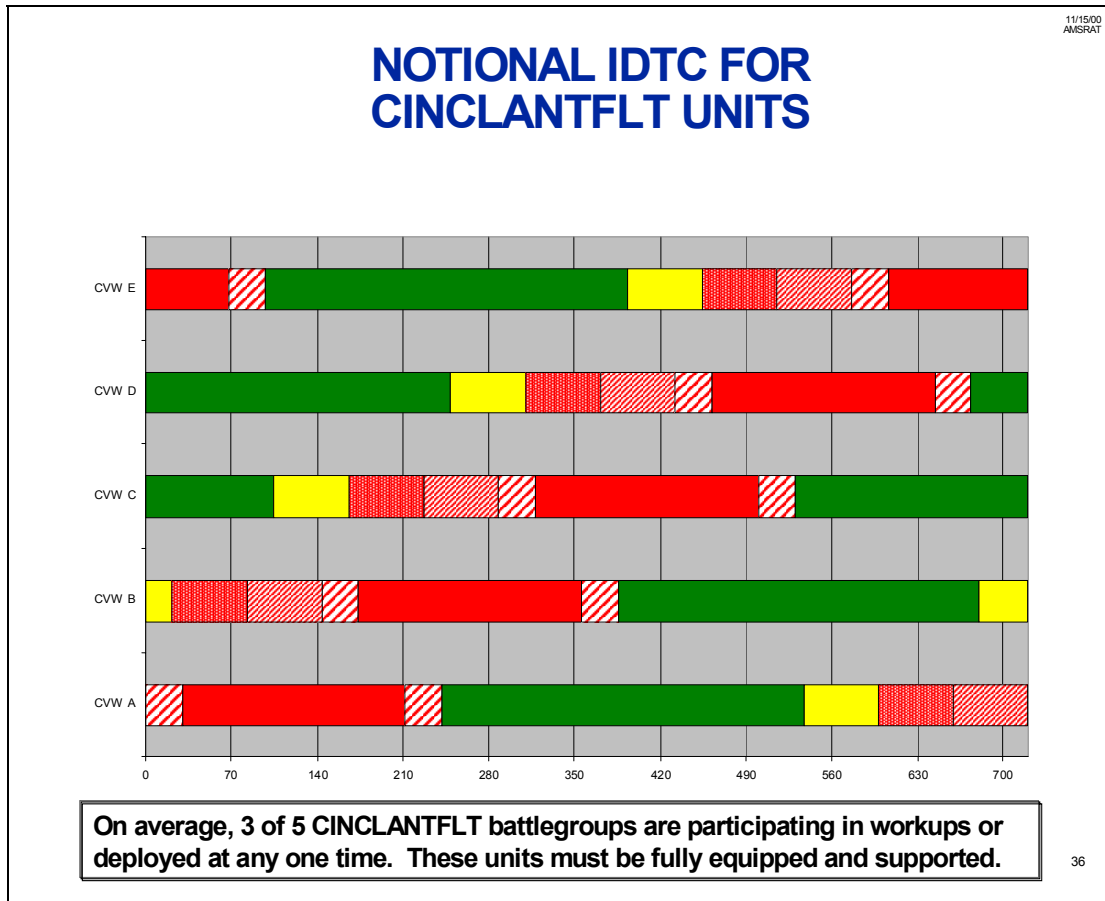
A flag-level panel (the AMSR Study Group) examined the processes and identified improvements which will reduce overall program costs, increase readiness and allow the warfighter to operate more effectively. That panel recommended endorsement and implementation of all process improvements outlined in its report. The NAVRIT /BOG was established to insure the process improvements recommended in that report are implemented and achieve the expected results.

## WARFIGHTER CONCERNS/FEEDBACK

- Aircraft cannibalization has increased fleet wide
- Weapons systems & equipment are sometimes delivered without adequate logistics support
- A balance between capability & supportability must be maintained
- Flying hour program (FHP) costs continue to rise
- Aircraft age is increasing
- Engine problems continue (e.g., bare firewalls, reliability concerns)
- Increased utilization of a smaller number of aircraft
- Workload of our sailors & marines is increasing
- The “Bath Tub Curve” still haunts us

### CARRIER AIRWING IDTC READINESS by Fiscal Year of Deployment





**WHEN** – From Production through the remaining life cycle phases.

**WHERE** – All Naval Aviation Community. The Cross-Functional Team (CFT) plays a major role in helping improve The Non-Deployed Naval Readiness by identifying and removing barriers from a specific process. Because processes are related, with each process having a supplier (input) and a customer (output), processes frequently cross the functional lines. Barriers exist not only within a functional area, but also between functional areas. They may be identified in the feedback to the supplier of one process, or from the hand-off to the customer responsible for another process.

Typically CFTs are formed to address high-leverage processes, either identified through strategic plan objectives or through a Thomas Group assessment and subsequent client agreement. Typically, a Flag Officer heads each CFT and is the owner of that process.

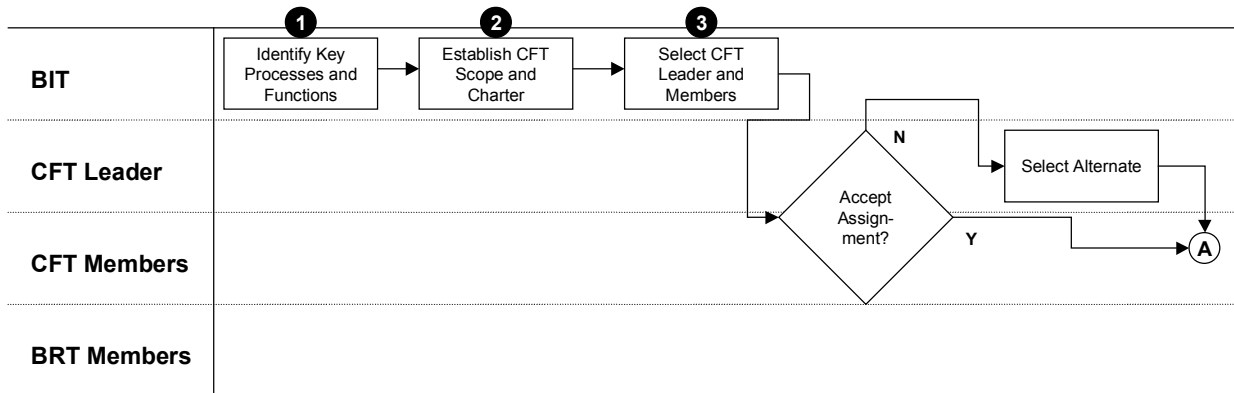
The chart below shows the NAVRIT/ BOG rollout schedule



**HOW** – You may be assigned to a CFT as it implements improvements in various processes. A 16-Step CFT Process, recommended by the Thomas Group, is described in detail in the CFT Handbook (see Links & References). The following provides you with an outline of that 16-Step Process.

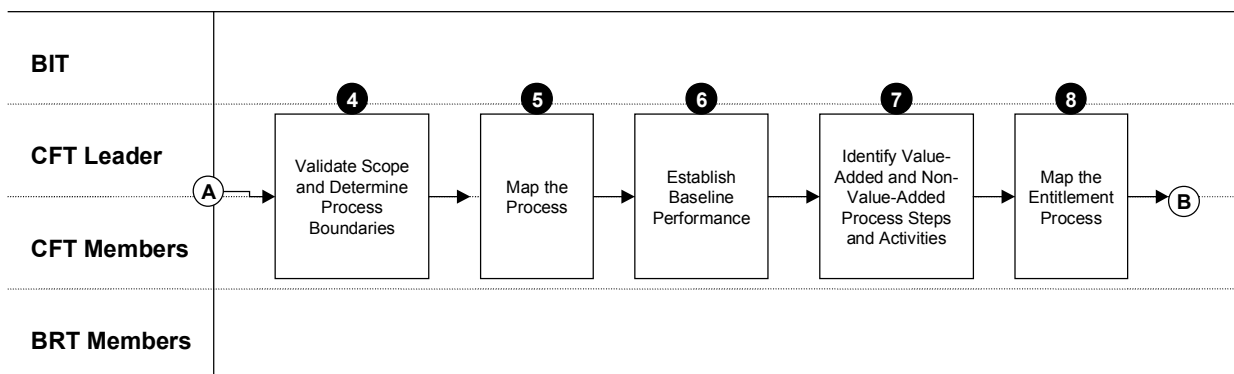
### Processes and Players

- Step 1 Identify the high leverage processes and functions involved
- Step 2 Establish the CFT scope and charter
- Step 3 Select CFT leader and members



### Scope and Mapping

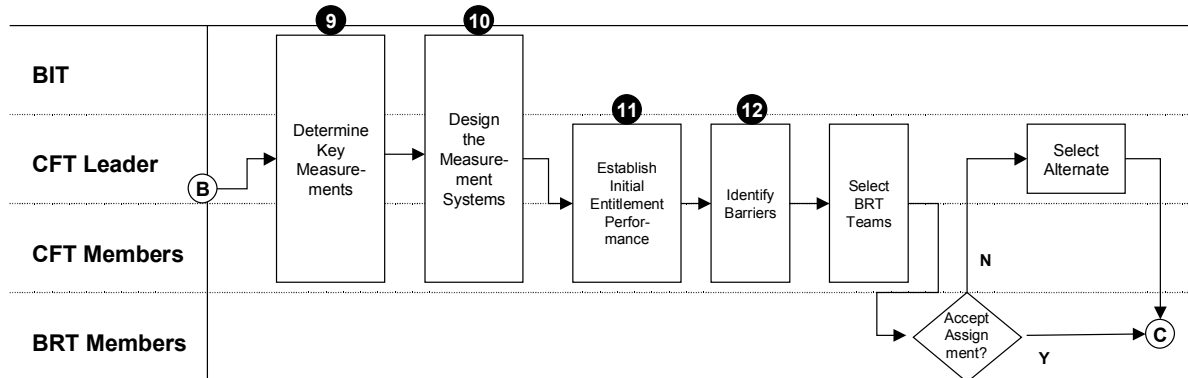
- Step 4 Validate scope and charter
- Step 5 Map the baseline process
- Step 6 Establish baseline performance
- Step 7 Identify value-added and non-value-added process steps and activities
- Step 8 Map the entitled process





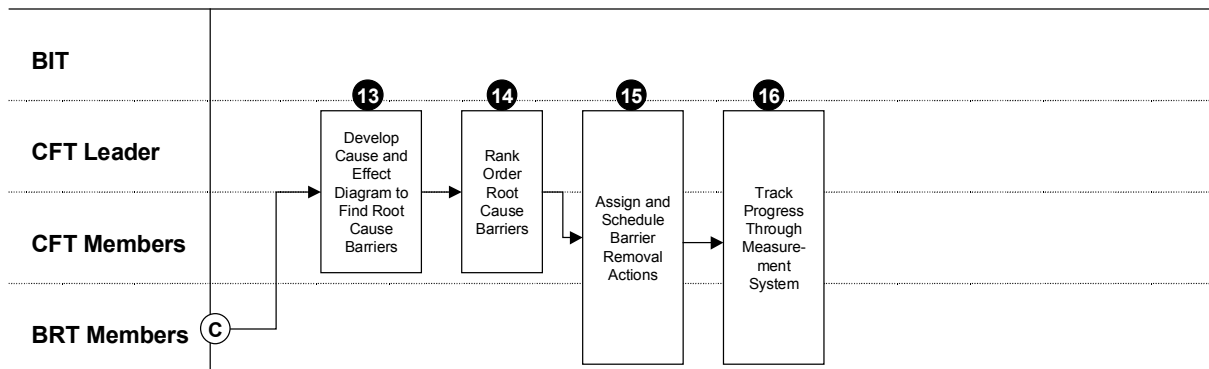
## Measurements

- Step 9 Determine key measurements
- Step 10 Design the measurement system
- Step 11 Establish initial entitled performance
- Step 12 Identify barriers



## Barriers

- Step 13 Develop cause-and-effect diagram to find root cause barriers
- Step 14 Rank-order root cause barriers
- Step 15 Assign and schedule barrier removal actions
- Step 16 Track progress through measurement system



Actions	Completed	FY 2001	FY 2002						FY 2003				FY 2004						
		Sep-01	Q1			Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3				
			Oct	Nov	Dec														
1. Establish Program Infrastructure																			
A. Create Cross-Functional Teams																			
B. Initialize Cross-Functional Teams																			
2. Introduce TCT Tools and Principles																			
A. Train Cross-Functional Teams			→ Ongoing as Required																
B. Introduce TCT Tools and Principles																			
C. Establish Communications Plan						10-Jan													
D. Develop Escalation Process																			
3. Develop and Install Metrics																			
A. Metrics Defined						18-Jan													
B. Metrics Installed							28-Jun												
C. Metrics Transition to Automated Tool								31-Jul											
D. Document Automated Data Collection Tool								27-Sep											
E. Metrics Continue to refine and Improve									→ Ongoing										
4. Understand Current Operating Environment																			
A. Map the Processes						11-Jan													
B. Collect Initial List of Barriers																			
5. Launch "Solution Phase"																			
A. Capture Quick-Kill Opportunities																			
B. Establish Entitled Processes																			
C. Complete Barrier ID and Analysis																			
D. Launch Initial Barrier Removal Teams																			
6. Ongoing Results																			
A. Ongoing Barrier ID & Analysis																			
B. Ongoing Barrier Removal Actions																			
D. Train CFTs & BRTs			Ongoing as Required																
E. Train NAVRIT Team																			
F. CFT Team Meetings			Weekly / Alternate Weeks as Required																
G. Study Best Practices--Other Sites																			
H. Quarterly Conferences of Corresponding Grps																			
I. Analyze AIMDs vs. MALS																			
J. Examine Ground Support Equipment Balance																			
K. Reconcile training needs vs. training delivery																			
L. Develop Top 10 List of Universal Barriers																			
M. Remove Universal Barriers using Cycles of Learning																			
N. Examine Process Maps for NVA--Eliminate																			
O. Develop and Emplement Barrier Removal Actions																			
P. Continual Reexamination of Gaps--Actual to Entitlement																			
Q. Develop Entitled Process Maps Train CFTs & BRTs																			
R. Critical Analysis of Program--Mid-Course Corrections																			
S. Re-Map the Process																			
T. Identify New List of Barriers																			
U. Launch New BRTs																			
V. Re-examine Measures																			
W. Exploit Cycles of Learning to ID/Remove Barriers																			
X. Follow up on Successes																			
Y. Internalize Methodology																			
Z. Retrain New Team Members as Assigned																			
AA. Celebrate Successes																			

**APML ROLE –**

- Initiate contact through the website POCs for information, guidance and responsibilities for NAVRIIP system program requirements
- Maintain awareness of specific system program initiatives and any corresponding actions required

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.6C	Customer Focus Metrics		(301) 757-8782
N814C	Readiness goals for FMC/MC	OPNAV	(703) 695-0356
AIR-6.0	Core Depot Workload		(301) 757-8408
AIR-1.3	Configuration Management		(301) 757-9090

**REF -** NAVRIIP Charter V.1.1 25 Oct 2001

**LINKS –**

<http://www.airpac.navy.mil/navriip/>

Commander Naval Air Forces, U.S Pacific Fleet – Public Affairs

[NAVRIIP CHARTER](#)

[BOG Concept of Operations](#)

<https://qtrdeck.nalda.navy.mil/navrit2.nsf>

NAVRIIT Action Item Tracking System

<https://www.nalda.navy.mil/apmlms/cft.zip>

CFT Handbook

[https://www.nalda.navy.mil/amsr/data/CNADatabase/MAR02\\_TLM.mdb](https://www.nalda.navy.mil/amsr/data/CNADatabase/MAR02_TLM.mdb)

Top Level Metrics (TLM) AV-3M Data Summary To view this database you must have Microsoft Access installed on your computer

## C-4 - DIMINISHING MANUFACTURING SOURCES AND MATERIAL SHORTAGES (DMSMS) PROGRAM

**WHO** – PM, APML, APMSE, IPTs, NAVICP (NAVICP-PHIL Code 0711 is tasked to assist in making DMSMS decisions that may arise within NAVICP-PHIL)

**WHAT** – *Diminishing Manufacturing Sources and Material Shortages (DMSMS):*

- The loss or impending loss of manufacturers or suppliers of items or raw material
  - Situation occurs when the manufacturer announces their intention to discontinue production of an item or group of items still required by DOD activities for systems support.
  - DMSMS can impact readiness and supportability at any point in the weapon system life cycle.

**WHY** –

- DMSMS situations tends to be pervasive in that they;
  - Preclude repair of materiel
  - Preclude procurement of additional systems, equipment, spare assemblies, and subassemblies that depend on the DMSMS items and raw materials for their manufacture.
  - Preclude continued operations of the weapons system due to lack of consumables (example freon for A/C systems)
- As technology changes at exponential rates and the DoD budget is decreasing, the current trend is for most industries, particularly the electronics industries is to phase out military products for the more lucrative consumer products. This will affect all military services because the reduction in the DoD budget has caused most military systems to be supported well beyond their intended life cycle. The majority of the problems for extended programs result in lack of spare & repair parts since the manufacturers are not willing to support older technologies due to high support costs. The Diminishing Manufacturing Sources and Material Shortages (DMSMS) problems are guaranteed to increase for the foreseeable future, and DMSMS can only be managed rather than be solved.
- In general, DMSMS is caused due to planned obsolescence. Since current technology is applied in current design, it will be become obsolete tomorrow. Planned obsolescence can happen deliberately by manufacturers leaving the military sector or inadvertently, for example, in the banning the use of ozone deleting substances.
- This problem can be further worsened when programs' & manufacturers' institute ECPs in production; but, fail to address how to support the in-service pre-ECP configuration. This also includes similar applications in other weapons systems, support equipment, trainers, etc.

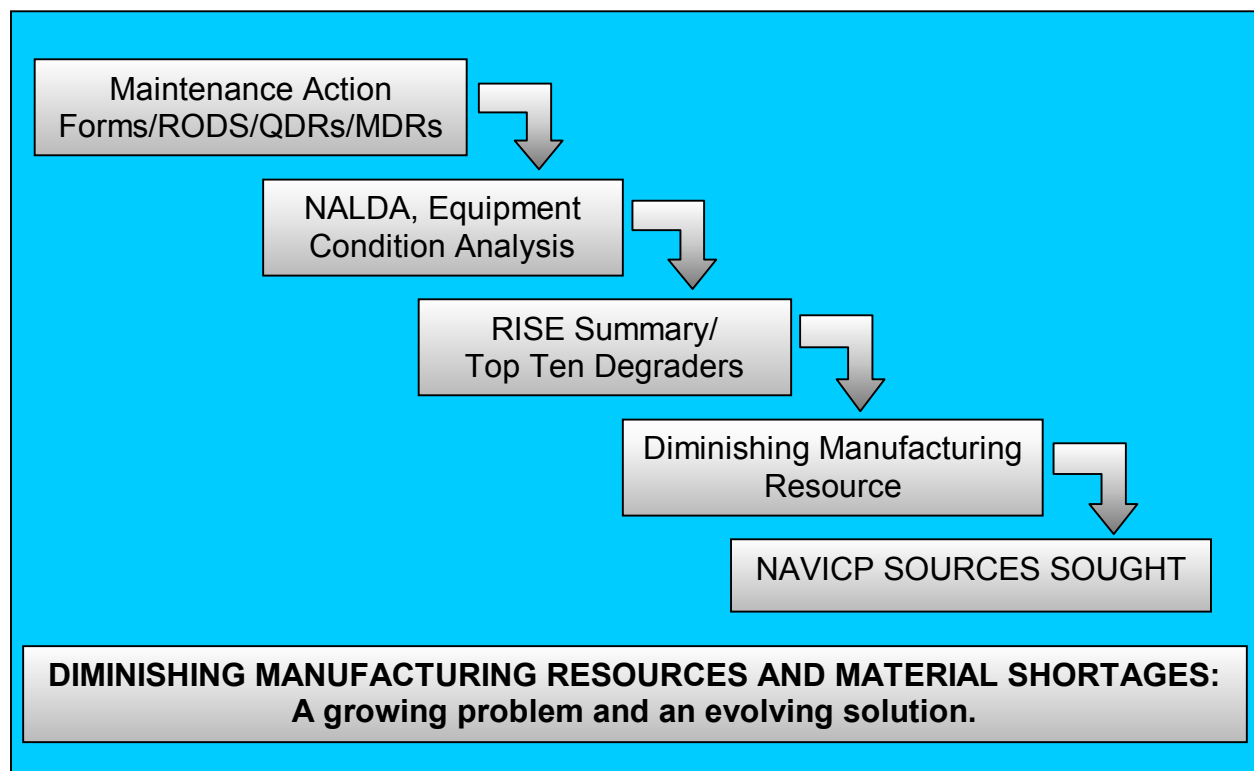
The DMSMS program management philosophy is to arrive at the optimal solution by balancing all known resources and then making trade-off decisions. However, the cost will be the primary factor in deciding on a solution for a particular DMSMS problem. Once DMSMS notification is received, code 0711 will coordinate with the agent requesting DMSMS support and the appropriate cognizant activities to develop and recommend a solution

**WHEN** – Optimally these problems are identified during EMD, but more often during stable operations and through the identification of the top degraders to aircraft Operational Readiness.

**WHERE** – NAVICP-PHIL (Code 07) Engineering, Prime Contractor

**HOW** – The DMSMS program management philosophy is to arrive at the optimal solution by balancing all known resources and then making trade-off decisions. However, the cost will be the primary factor in deciding on a solution for a particular DMSMS problem.

Once DMSMS notification is received, DMSMS Program Office will coordinate with the agent requesting DMSMS support and the appropriate cognizant activities to develop and recommend a solution



**Approach:**

- Identifying DMSMS Problems.
- Formulating Recommendations
- Validating the Recommended Solutions
- Following Up Validation with Logistics Systems Changes

**Considerations:**

- Aggressively seek alternate sources for DMSMS items when Component weapon system readiness or performance goals may not be met.
- Participating in post production support planning activities conducted as part of the logistics support program and documented in the logistics support plan.
- Ensuring, to the maximum extent practical through parts screening for potential technology obsolescence, that identified DMSMS items are not included in DoD systems during design, redesign, or production.
- Establishing the most cost-effective solution consistent with mission requirements when an item is identified as DMSMS.
- Ensuring that DMSMS information is effectively communicated and exchanged within the Department of Defense, with other Government organizations, and with industry through the maximum use of alerts and the Government Industry Data Exchange Program (GIDEP).
- Encourage the existing source to continue production. [NOTE: Usually, the DPAS Officer can require a US company (or Foreign Company on US Soil) to continue to manufacture or re-establish production of an item that he has built for DoD within the last 2 years; however, DoD will have to pay the cost to re-establish or maintain the production line, including cost increases due to lower production rates.]
- Find another source
- Obtain an existing substitute item that will perform fully (in terms of form, fit, and function)
- Obtain an existing substitute item that, while it would satisfy one or more functions, might not necessarily perform satisfactorily in all of them (limited substitute).
- Redefine military specification (MIL-SPEC) requirements through applicable engineering support activities, and consider buying from a commercial source. That redefinition may include MIL-SPEC tailoring.

- Use current manufacturing processes to produce a substitute item (form, fit, function) for the unobtainable item.
- Make a “bridge buy” of a sufficient number of parts to allow enough time to develop another solution.
- Make a Life-of-Type (LOT) buy. Based on estimated life-of-system requirements, the DoD Components may make a onetime procurement of enough material to last until the end items being supported are no longer in use

**APML ROLE –** The APML is responsible for the identification of the top degraders to weapons system readiness and the resolution of these problems with NAVICP, DLA and other material support agencies.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
0711.02		NAVICP Philadelphia	(215) 697-5168, DSN 442-5168
		NSWC Crane	(812) 854-6175, DSN 482-6175

**REF –**

NAVICP Instruction 4431.2

DoD 4140.1-R

DEPSECDEF Memo dtd 30 October 2002 – Provides interim guidance for 5000 Series policy

MIL-HDBK-512, Parts Management

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

[www.navicp.navy.mil/07/diminishing\\_manufacturing.htm](http://www.navicp.navy.mil/07/diminishing_manufacturing.htm)

Naval Supply Systems Command – Navy Inventory Control Point

<https://web1.deskbook.osd.mil/data/025DR001DOC.DOC>

Acquisition Logistics & Technology (AT&L) Knowledge Sharing System

<https://www.gidep.corona.navy.mil>

[http://www.dmea.osd.mil/pmhandbook\\_rev\\_d.pdf](http://www.dmea.osd.mil/pmhandbook_rev_d.pdf)

DMSMS Program Managers Handbook Common Practices to Mitigate the Risk of Obsolescence

DoD 4140.1-R DoD Materiel Management Regulation (Updated 24 July 2001) May 1998 C1. -- Chapter 1 Acquisition Materiel Management (Mandatory)

<http://www.crane.navy.mil/sd18/dmsms.pdf>

Crane Division, Naval Surface Warfare Center

<http://dmc-dms.crane.navy.mil/dmc.htm>

DMS – Technology Center



## C-5 - FLEET SUPPORT TEAM (FST)

**WHO** – NAVAIR, PM, APML, APMSE, TYCOM, NAVICP, DLA

**WHAT** - Given the variability of how PMAs structure their programs, the FST is either defined as:

- A virtual team superimposed upon the existing Program Team IPT structure and comprised of team members who perform the functions associated with in-service engineering and logistics support, or
- A non-geographic, multi discipline integration team responsible for providing in-service engineering and logistics support. In both definitions, the FST works in a networked, collaborative fashion to ensure that the functions of in-service engineering and logistics support of an aircraft, weapons system or equipment are properly attended. The boxes below provide a very top-level view of the FST, customers, tasks and products.

FST structures may vary by program but their general missions and focus will be very similar.

Customers can vary widely depending on PM IPT structures.



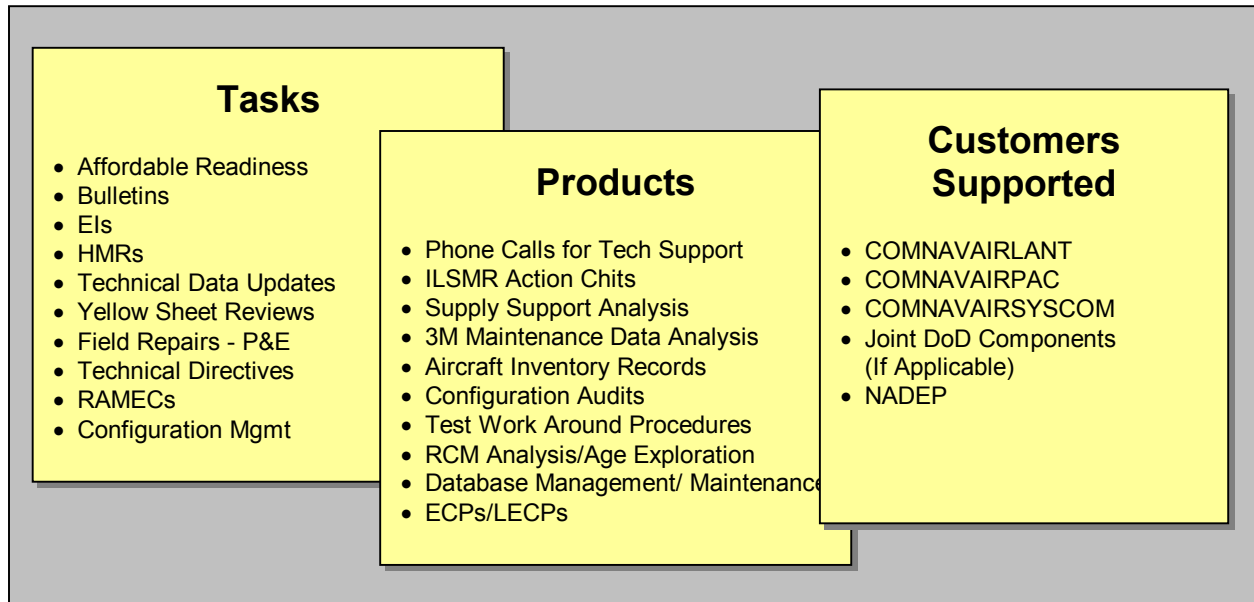
**WHY** - Ensures fleet assets are safe for operation, available and at a cost that provides overall best value to the user.

**WHEN** - Not later than the Low Rate Initial Production (LRIP) decision. To ensure operational effectiveness and suitability from the first delivery to the user.

- Budget (APN, Research, Development, Test, and Evaluation (RDT&E), PRL) begins early in the SD&D Phase.

## WHERE – NAVAIR, PM

**HOW** – See “DRAFT” NAVAIRINST 5400.153 for notional guidelines to establishing a FST including Leadership, Charter and TAAs.



## APML ROLE – IPT LEAD

Initiate Charter, TWP, TAAs and Obtain and or assign resources to establish team requirements.

- APML/Class Desk is responsible for identifying work year/funding requirements. (see Tab D-04, PRL and Tab D-07, PRE)

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	ILA	NAVAIR HQ	(301) 757-9183

## REF –

IPT Manual Update, December 1996  
Program Operating Guide (POG)

## LINKS –

<http://www.nalda.navy.mil/instructions/default.cfm>  
Acquisition Logistics Support Plan

## C-6 - INDEPENDANT LOGISTICS ASSESSMENT (ILA)

**WHO –** NAVAIR: PAX: 3.1E, PEO, PM, APML, APMSE, Fleet

**WHAT –**

- A process to ensure that the acquisition product can be effectively supported during the acquisition process and, more importantly, that it can be adequately supported throughout its service life.
- To help meet these objectives;
  - The ten product support elements are assessed
  - Various acquisition program planning documents are reviewed to ensure that they project the strategies and processes detailed in the Operational Requirements Document (ORD).
  - The verification that the processes express adequate acquisition product support planning, management, execution, and resources.
  - A determination is made on the degree to which the program is ready for OPEVAL.

**WHY –**

- SECNAV 4105.1 requires an assessment to certify the adequacy of ILS planning, resources, and execution in support of the research and development, acquisition, production, and Fleet introduction of new or modified systems.
- The DoD Directive 5000.1 requires focus on logistics considerations early in the design process to ensure that they deliver reliable systems that can be cost-effectively supported and provide users with the necessary support infrastructure to meet peacetime and wartime readiness requirements.
- The ILA process is a means of conveying to the PEO and the MDA, an independent evaluation of the logistics health of the program at each acquisition milestone.

**WHEN –** The NAVAIR ILA & Program Planning Guide Book (see links & references) provide detailed information on the requirements and their associated phases.

AIR 3.1E, the ILA Branch is responsible for conducting the independent assessments required by SECNAVINST 4105.1. Each program is assigned to one of the five teams residing within the ILA Branch. The Team Leader is responsible for conducting the assessment and certification effort according to the process, which has been validated and approved by OPNAV.

**WHERE –** NAVAIR: PAX: 3.1E, IPTs

## HOW –

- AIR 3.1E, the ILA Branch is responsible for conducting the independent assessments required by SECNAVINST 4105.1.
- Each program is assigned to one of the five teams residing within the ILA Branch.
- The Team Leader is responsible for conducting the assessment and certification effort according to the process, which has been validated and approved by OPNAV.
- Detail instructions and requirements are included in the NAVAIR ILA Guidebook and SECNAV INST 4105.1. See Links below for website.

## APML ROLE –

- Initiate interface with AIR-3.1E ILA team to ensure planning and requirements are identified early
- The ILA team will contact the IPT as early as possible and provide continuous assistance, ideally, as much as two to five years before the milestone decision meeting.
- The review will encompass all programmatic aspects that address or affect supportability, logistics, or readiness.
- This process helps to eliminate issues/findings from occurring immediately before the milestone decision meeting.

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			(301) 757-8227

## REF –

DEPSECDEF Memo dtd 30 October 2002 – Provides interim guidance for 5000 Series policy

SECNAVINST 4105.1

NAVAIR ILA Guidebook

## LINKS –

<http://dod5000.dau.mil/>

DoD 5000 Resource Center

[www.nalda.navy.mil/ila](http://www.nalda.navy.mil/ila)

Logistics Tool Box

[www.nalda.navy.mil/ila/guidbkjul01.doc](http://www.nalda.navy.mil/ila/guidbkjul01.doc)

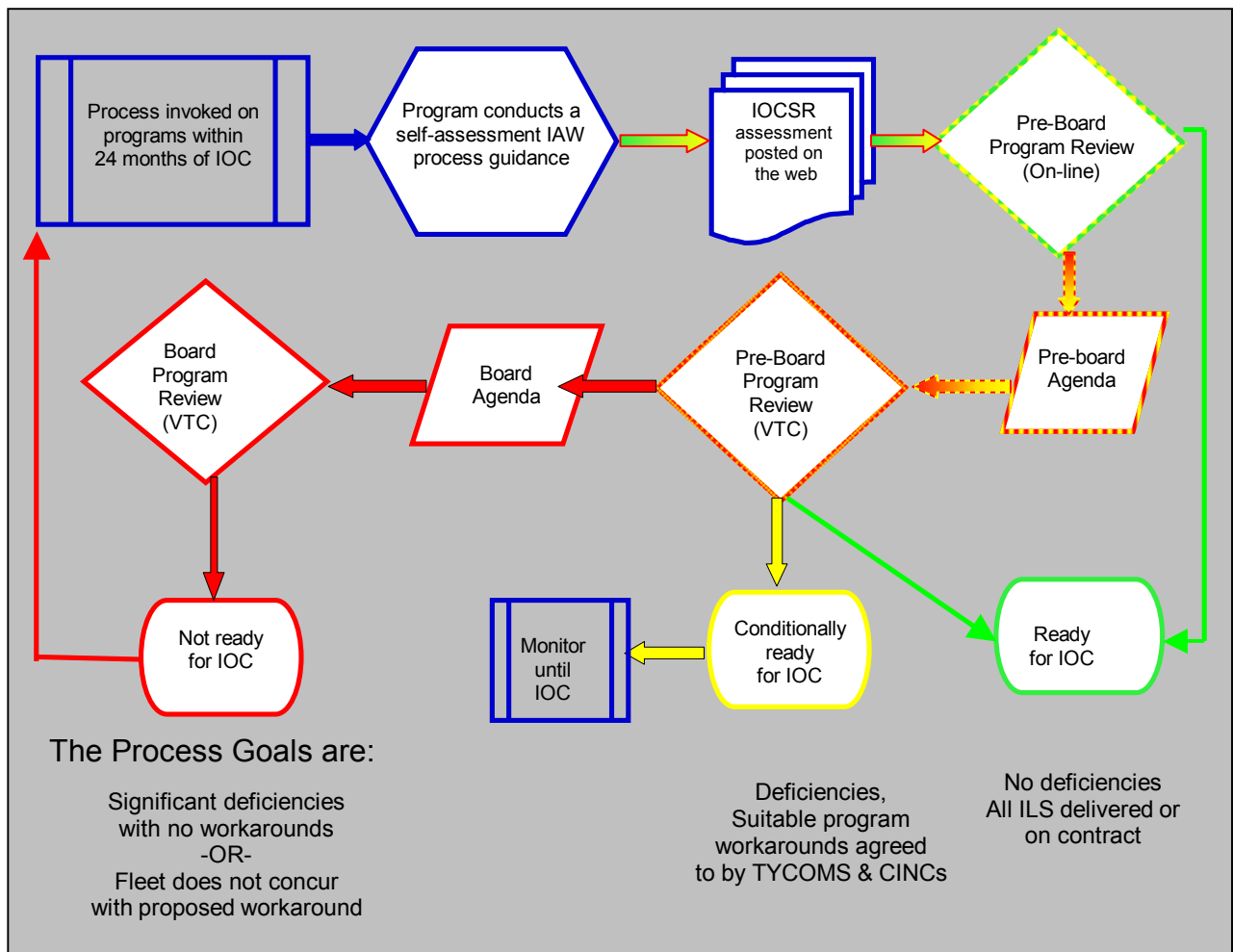
[Logistics Tool Box](#)

[SECNAVINST 4105.1](#)

## C-7 - INITIAL OPERATIONAL CAPABILITY SUPPORTABILITY REVIEW (IOCSR)

**WHO** – OPNAV, HQMC, NAVAIR, PM, APML, APMSE, NAVICP, Fleet (CINC, TYCOMs)

**WHAT** – A formal supportability review prior to IOC/fleet introduction of ACAT I-IV systems & equipment. It will positively impact supportability programs through augmented management attention, realignment of funds, or other available means, and to communicate the Product Support Implementation posture of systems & equipment to our fleet customers.



**WHY** – IOCSR replaces the ILA for IOC and is the basis for certifying the adequacy of weapons system supportability for IOC to the MDA to:

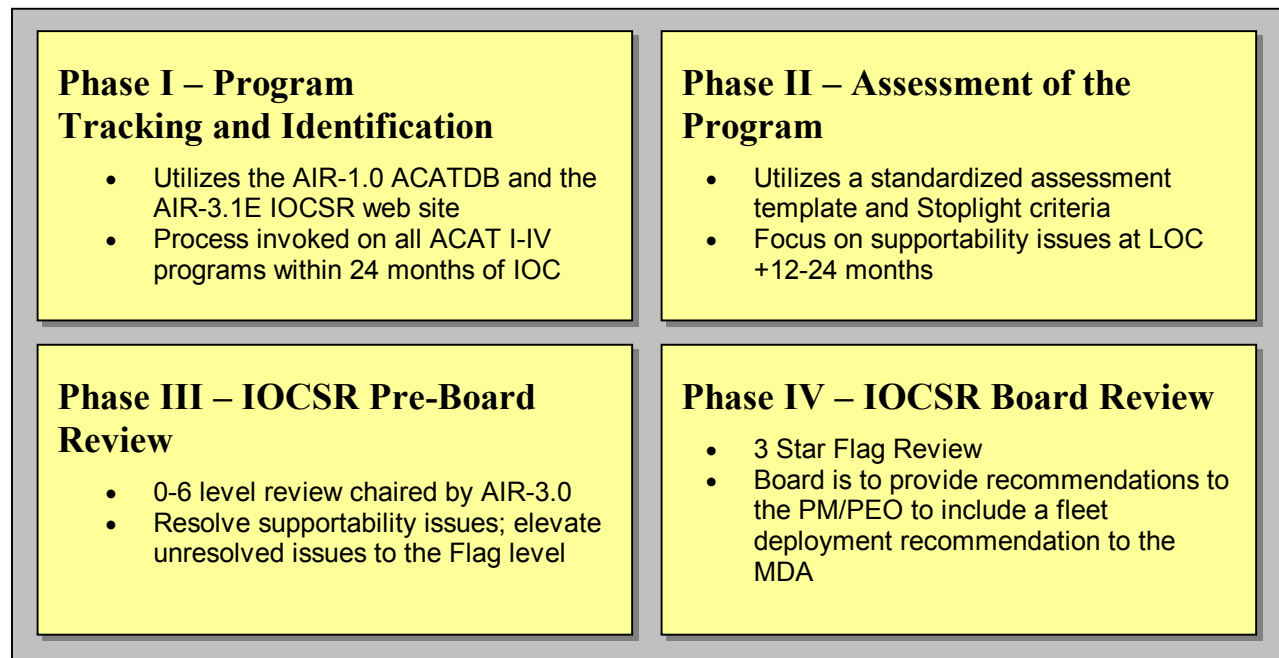
- Communicate the supportability status of systems being introduced to the fleet; obtaining fleet concurrence with proposed mitigation plans for supportability issues
- Provide management oversight and resources to systems with supportability issues.

**WHEN** – Process begins within 24 months of the established IOC

**WHERE** – OPNAV, HQMC, NAVAIR, PM APML, APMSE, NAVICP, Fleet (CINC, TYCOMs)

**HOW** – The IOCSR process consists of four major phases:

- Phase I - Identification of Programs to be Assessed
- Phase II - The Self-Assessment
- Phase III - The Pre-IOCSR Board
- Phase IV - The IOCSR Board

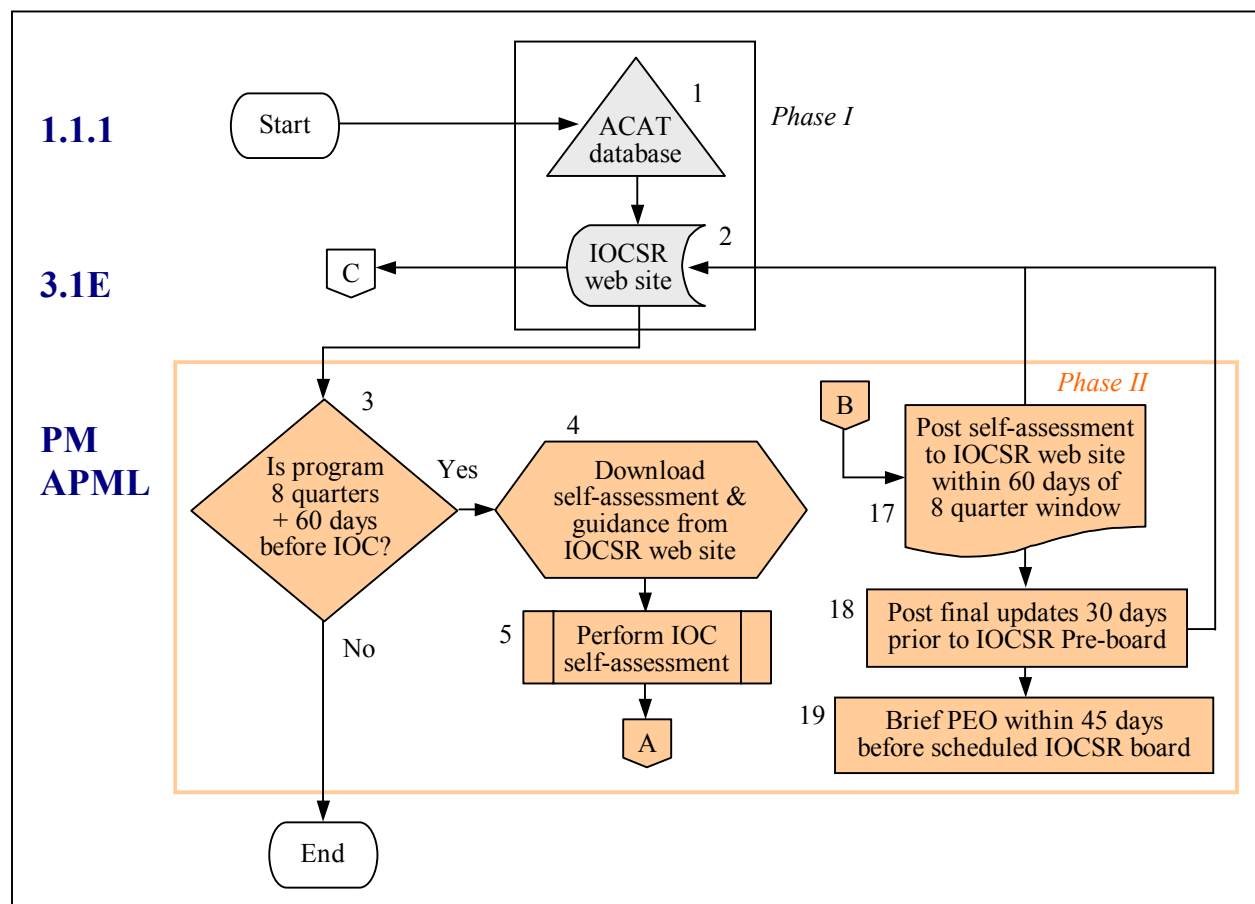


To accomplish the objectives of the IOCSR, specific functions must be accomplished and certain products and support services must be provided. This describes those functions, products and services.

## Phase I – Identification of Programs to be Assessed

### IOCSR Database: (see illustration below)

- Replicated from the AIR-1.0 managed ACAT database.
- Program Management Support (AIR-1.1.1) maintains the AIR-1.0 program listing and decision milestone database with input from the applicable PEO's.
  - AIR-1.1.1 will provide a copy of this database quarterly to AIR-3.1E
  - AIR-3.1E replicates the information into the IOCSR Web site
  - PEO's ensure that program listings and decision milestones data contained in the AIR-1.0 managed database is current.
- AIR-3.1E maintains the “*password protected*” program milestone database on the IOCSR Web site [qtrdeck.nalda.navy.mil/ioc](http://qtrdeck.nalda.navy.mil/ioc) to identify major decision milestones and IOC/fleet introduction dates.



## Phase II – The Self-Assessment

- Every PM and APML will jointly conduct an IOC self- assessment.
- The self-assessment results will be recorded using the IOCSR self-assessment briefing template, provided on the aforementioned IOCSR Web site, and will be made available on the IOCSR Web site.
- Strict adherence to the format is mandatory.
- Use of high-density graphics in the assessment is prohibited due to the web enable nature of the process.
- All ACAT programs that will reach IOC/fleet introduction within the forthcoming eight quarters of the current date are to be assessed.

### ***Within 60 days after entering the eight quarter window:***

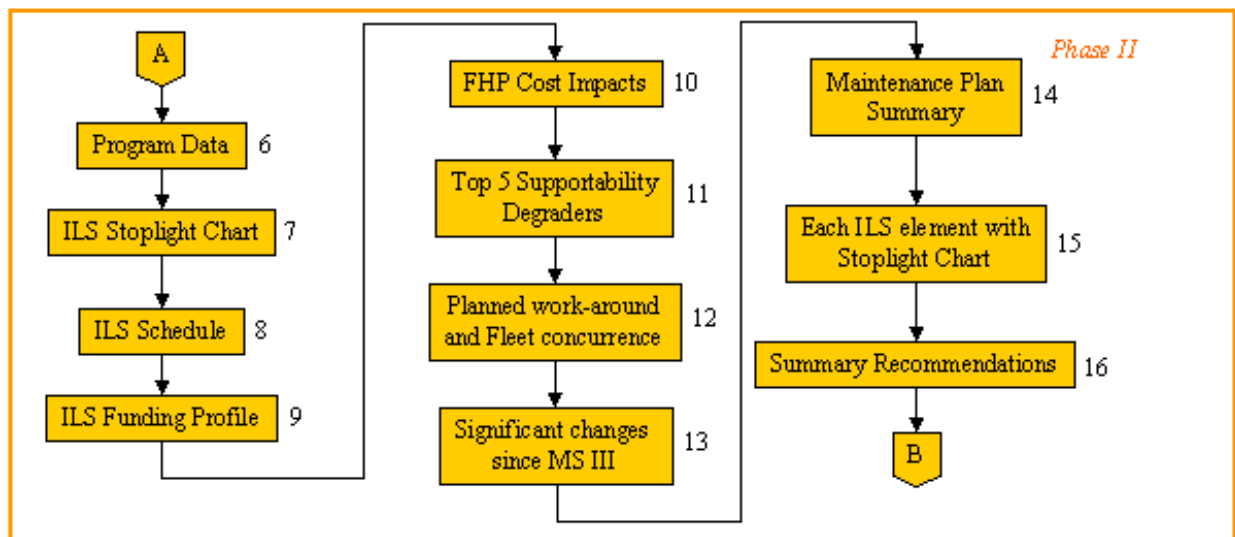
- The PM/APML will ensure a self-assessment is completed
- The PM/APML ensures assessment is maintained current on the Web site

### ***NLT 30 days prior to the semi annual and annual Pre-IOCSR board meetings:***

- Semi-annual meetings (April and October)
- Annual meeting (June).

### ***Within 45 days of the scheduled board:***

- Programs are required to pre-brief the cognizant PEO





***Self-assessments will address the following:***

- Program data (name, ACAT, cognizant PEO/PM/logistics manager mission, inventory, background, and IOC date/definition/location);
- ILS stoplight chart (criteria provided in enclosure 2 of NAVAIRINST);
- ILS schedule (including MS C or full rate production decision);
- ILS funding profile (by logistics element and appropriation);
- Flying Hour Program (FHP) cost impact/delta;
- Top five (5) supportability degraders (address issues & mitigation planning);
- Planned work-around and fleet concurrence;
- Significant changes since MS C or Full Rate Production decision and effects (if any) on the following:
  - Configuration
  - Funding adjustments
  - Schedule deviations
  - Other impacts
- Maintenance plan summary O/I/D;
- Each ILS element, w/stoplight chart (addressing status/impact/action) and Conclusion(s)
- Summary recommendation(s), including Fleet introduction/deployment recommendation

***Fleet concurrence:***

- The PM/APML, during the course of the self-assessment, must obtain fleet concurrence/non-concurrence with assessments for;
  - Proposed work-around planning, whenever full supportability will not be available at system IOC/fleet introduction.
  - For maintenance/supply by the affected TYCOM Maintenance and Supply Officers and it must be displayed on the appropriate chart.
    - The TYCOM maintenance and supply officers are also members of the IOCSR Pre-board.

**IOCSR COLOR CODE "STOPLIGHT" CRITERIA**

**Color code "stoplight" Criteria:** Will be used during the IOCSR process in portraying a program's readiness for IOC/fleet introduction:

- **Green (Ready for IOC/Fleet Introduction):**
  - A program that is approaching IOC/fleet introduction is fully supportable in that ILS element when all the logistics products (technical manuals, support equipment, etc.) for that element are on contract and have an expected delivery date that supports the planned IOC/fleet introduction date.
  - A program that is at, or past, IOC/fleet introduction is fully supportable when all the logistics products have been delivered.
- **Yellow (Partially Ready for IOC/Fleet Introduction):**
  - A program that is approaching IOC/fleet introduction is partially supportable in that ILS element when all the logistics products for that element are on contract, but one or more products do not have a delivery date that supports the planned IOC/fleet introduction date. There must be very specific work-around that have been agreed to by the users for such products. Provide a detailed backup slide for each "yellow" element explaining the work-around (agreed to by the user) and what you are doing to correct the problem.
  - A program that is at, or past, IOC/fleet introduction is partially supportable when a minimum number of the logistics products have been delivered and user agreed to work-around are in place. Provide a detailed backup slide for each "yellow" element explaining the work-around (agreed to by the user) and what you are doing to correct the problem.
- **Red (Not Ready For IOC/Fleet Introduction):**
  - A program that is approaching IOC/fleet introduction is not supportable in that ILS element when one or more logistics products are not on contract, or contract delivery does not support the planned IOC/fleet introduction date and no specific work-around exist that have been agreed to by the users. Provide a detailed backup slide for each "red" element explaining what you are doing to correct the problem.
  - A program that is at, or past, IOC/fleet introduction is not supportable when a minimum number of the logistics products have not been delivered and user agreed to work-around are not in place. Provide a detailed backup slide for each "red" element explaining what you are doing to correct the problem.

### Phase III - The Pre-IOCSR Board

Based upon their review of the self-assessments, the Pre-IOCSR board is responsible for:

- Resolving support issues where possible;
- Recommending positions to be taken by the IOCSR board (such as delay of IOC/fleet introduction, proceeding to IOC/fleet introduction with existing/planned deficiencies, addition of funding/management attention, etc.);
- Recommending any special actions or conditions; and;
- Recommending which programs are to be briefed to the IOCSR board.

#### ***The Pre-IOCSR board:***

- Meeting semi-annually in April and October
- Will review programs scheduled to reach IOC or be introduced into the fleet within the forthcoming eight-quarter window.
- ***AIR-3.1E will:***
  - Establish the exact schedule
  - Notify all participants
  - Make all necessary arrangements (e.g., VTC, conference room reservations etc.).

#### ***Action Items:***

- Pre-IOCSR and IOCSR Board generated action items:
  - Require written concurrence (from originator) prior to final closure
  - Will be monitored by AIR-3.1E and the cognizant Air Program Executive Officer (APEO) (L) to ensure timely completion

### Phase IV – The IOCSR Board

- Based upon their review of the self-assessments and the Pre-IOCSR board's and the fleets' recommendations, the IOCSR board is responsible for:
  - Recommending actions to be taken by the PM or sponsor (such as delay of IOC/fleet introduction, addition of funding, etc.)
  - Proceeding to IOC/fleet introduction with inadequate supportability
  - Recommending any special actions or conditions

## APML ROLE –

- Review system program planning and interface with AIR-3.1E IOCSR POC for requirements including;
  - System program requirement
  - Schedule
  - Training (if required)
  - Website Password
  - Template
- Ensure execution of IOCSR requirements and coordination within the IPTs and system Program Team
- Early Team communication with the User and Management is imperative!

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	IOCSR	NAVAIR HQ	(301) 757-8229

**REF –** NAVAIRINST 4081.3

## LINKS –

<https://www.nalda.navy.mil/actiontracking.html>

Logistics Tool Box

<https://www.nalda.navy.mil/actiontracking.html>

Logistics Tool Box

## **C-8 - THE NAVAL AVIATION MAINTENANCE PROGRAM (NAMP)**

**WHO** – All Naval Aviation

**WHAT** –

- NAMP Policy (OPNAV 4790.2 series)
  - Volumes I, II, III, IV, and V of subject program
- This instruction outlines command, administrative and management relationships
- Establishes policies and procedures for the assignment of maintenance responsibilities and tasks
- The basic document and authority governing the management of all naval aviation maintenance
  - All directives and instructions in conflict with the provisions of the instruction shall be revised to ensure conformity.

**WHY** – To issue the maintenance policies, procedures, and responsibilities for the conduct of the NAMP at all levels of maintenance throughout naval aviation

The objective of the NAMP is to:

- Meet and exceed aviation readiness and safety standards established by CNO
- Optimize the use of manpower, material, facilities and financial resources in accordance with policy guidance and technical direction provided by this instruction and by related implementing directives
- "Achieve continuous process improvement" as detailed in Volume I, Chapter 2
- Provides for the maintenance, manufacture and calibration of aeronautical equipment and material at the level of maintenance which will ensure optimum use of resources
- Provides for the protection of weapon systems from corrosive elements through an active corrosion control program, and the application of a systematic planned maintenance program
- Provides for the collection, analysis, and use of pertinent data to continuously improve material readiness and safety at the least possible cost.

**WHEN** – From weapons system delivery through system retirement/disposal.

**WHERE** – NAVAIR, Fleet (All Naval Aviation)

**HOW** – The NAMP is sponsored and directed by CNO. It is administered through the chain of command and is provided material and technical support by the cognizant systems commands.

NAMP Policy Committee:

- Established under the sponsorship of the Head, Naval Aviation Maintenance Programs Branch (N781). The Head, Plans, Policy, and Fleet Maintenance Support Section (N781C) will chair the NAMP Policy Committee.
- Primary function;
  - Monitor and recommend to CNO policies and procedures required for continued employment and refinement of the NAMP in the operating forces and shore establishment of the Navy and aviation units of the Marine Corps.
  - Voting members – NAVAIR, CNAL, CNAP, CNATRA, CNARF, NAVSUP
  - Advisory members – NAVSAFCEN, SPAWARSSYSCEN, NAVAIR

NAMP Working Committee:

- Established under the sponsorship of the Head, Naval Aviation Maintenance Program Branch (N781). The Head, Plans, Policy, and Fleet Maintenance Support Section (N781C) or designated representative will chair the NAMP Working Committee.
- Responsibility:
  - Developing and formulating the agenda for the NAMP Policy Committee meetings.
  - Staffing all agenda items prior to Policy Committee meetings
  - Addressing action items assigned by the NAMP Policy Committee.
  - The NAMP Working Committee normally meets semiannually, or as directed by the chairperson.
  - Voting members – NAVAIR, CNAL, CNAP, CNATRA, CNARF, NAVSUP
  - Advisory members – NAVSAFCEN, SPAWARSSYSCEN, NAVAIR, NATEC, NAWCWD.

COMNAVAIRSYSCOM (AIR-3.2D): Designated as coordinator of the instruction and shall:

- Develop and submit recommended changes to CNO for approval
- Coordinate the review process for all recommended changes to the NAMP, including the Communication Security (CSEC)
- Develop interim changes for approval and release by CNO
- Assist CNO in processing requests for NAMP deviations
- Coordinate and incorporate corrections

- Prepare formal NAMP change packages for submission to CNO for approval, printing, and distribution
- Research and respond to NAMP related questions
- Coordinate NAMP Policy and Working Committee meetings
- Track action items initiated by the NAMP Policy and Working Committees
- Stock and distribute this instruction as an interactive electronic technical instruction on CD-ROM and coordinate availability of limited paper copies in the supply system
- Review NALCOMIS change proposals and trouble reports for NAMP impact
- Review Naval Ordnance Maintenance Management Program (NOMMP) change proposals for NAMP impact
- Review process improvement initiatives such as Regional Maintenance/ BFIMA for NAMP impact
- Maintain and update CSEC software and maintain core question database

**APML ROLE –**

- Ensure ALSP requirements are NAMP compliant and coordinated with the user
- Ensure maintenance programs are established in compliance with the NAMP
- When system program requirements conflict with the NAMP, ensure required NAMP policy committees are informed through requests for action and approval

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2D	NAMP ACT	NAVAIR HQ	

**REF -** OPNAV INSTRUCTION 4790.2 Series  
NOMMP OPNAV INSTRUCTION 8000.16 Series

**LINKS –**

<https://www.nalda.navy.mil/4790/>

Logistics Tool Box

<https://www.nalda.navy.mil/documentation.html>

Logistics Tool Box

<https://www.nalda.navy.mil/webtips/>

NAMP trouble shooting tips

## **C-9 - NAVAL ORDNANCE MAINTENANCE MANAGEMENT PROGRAM (NOMMP)**

### **OPNAVINST 8000.16 Series**

**WHO** – NAVAIR, APML, IPTs, FST, Fleet

**WHAT** – All Navy and Marine Corps activities concerned with the use, maintenance, overhaul, production and support of naval ordnance and associated equipment. In addition to specifying maintenance processes, the NOMMP addresses interactive programs, including maintenance management, maintenance engineering, fleet support, inventory management, asset and fiscal resources, and associated reporting and automated data processing systems.

**The NOMMP:** (is divided into the following four volumes)

- *Volume I* – Concepts, Objectives, Policies, Organizations, and Responsibilities
- *Volume II* – Organizational, Intermediate, and Depot Level Maintenance Responsibilities
- *Volume III* – Surface Ammunition
- *Volume IV* – Appendices/Index

**WHY** – The NOMMP OPNAVINST 8000.16 Series, per the direction of the CNO governs the management of naval ordnance maintenance; whereas, the NAMMP OPNAVINST 4790.2 Series governs the management of all naval aviation maintenance.

**WHEN** – All Phases of the acquisition life cycle

**WHERE** – NAVAIR, Fleet (All Naval Weapons Activities)

**HOW** – The NOMMP is sponsored and directed by CNO. It is administered through the chain of command and is provided material and technical support by the Commander Naval Air Systems Command.

#### ***NOMMP Support Team***

- Located at Point Mugu, CA.
- Issue maintenance policies, procedures, and responsibilities
- Ensure updated material is available throughout the ordnance community
- Composed of military and civilian with extensive maintenance management experience



- Receive and verify information from the fleet
- Update the four volumes of the OPNAVINST 8000.16 Series
- Perform a variety of additional functions that include:
  - Stock and distribute the NOMMP (Paper & CD-ROM)
  - Review all change proposals
  - Review OPNAVINST 4790 change proposals
  - Develop recommended changes
  - Assist in processing interim changes and deviations
  - Maintaining CNO Red Shirt web page
  - Facilitate, coordinate, and support Policy and Working Sub-Committee meetings

**CNO Red Shirt Web Page:**

- Created and maintained by The NOMMP office
- Site contains the latest edition of the OPNAVINST 8000.16A publication with all of its current interim changes
- Site also contains a wealth of information that can be extremely useful to the Fleet and others involved with weapons maintenance and related support including;
  - On-line publications
  - Links to the Airborne Weapon Information Systems
  - Ordnance directories
  - Weapon logistic points of contact
  - Change process section and much more
  - For the CNO Red Shirt Web Page, see links below

**APML ROLE –**

- Ensure all system support planning and requirements consider NOMMP requirements and interface with users to eliminate any conflicts or to determine workable solutions
- Ensure ALSP reflects NOMMP requirements for system support planning

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
	NOMMP Manager		DSN 893-6204
	NOMMP Coordinator		DSN 893-6500/6232

**REF –** OPNAVINST 8000.16 Naval Ordnance Maintenance Management Program (NOMMP)

**LINKS –** <https://redshirt.mugu.navy.mil>

## C-10 - PRODUCT SUPPORT EVALUATION

**WHO** – APML, IPTs, Prime Contractor

**WHAT** – The continuous confirmation, that the ALSP activities and events occur as scheduled, and meet the operational user's needs.

**WHY** –

- Validates the suitability of the system support to meet the intended needs of the user within cost, schedule and performance
- Provides actual versus planned activities and events identified in the approved ALSP
- Feedback provides vital management information when planned results fall short and alternative approaches must be taken to achieve intended results.

**WHEN** – Throughout the system life cycle including;

- Major Milestone decisions
- Development, Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E)
- IOC
- Deployment (pre and post)
- Sustainment (continuously to increase availability, improve supportability and reduce total ownership cost)

**WHERE** – NAVAIR, FST, Fleet, Prime Contractor

**HOW** – The APML 's responsibilities for overall product support management are broad. This requires the logistics team including LEMs, LMs, and IPTs to accomplish the majority of tasks required, with the APML providing leadership and the tools necessary to achieve the objective.

**Evaluation activities include but are not limited to the following;**

### **Evaluation of Competing Contractors**

Product Support evaluation of competing contractor proposals is part of the overall source selection process early in systems acquisition and throughout the lifecycle. As part of the APML's contribution to the RFP, the APML defines product support proposal information requirements (i.e., the information that will be evaluated to determine the adequacy of the contractor's ability to conduct the product support program). Upon receipt of competing contractor proposals, the APML team ensures a product support source selection evaluation is conducted of the data submitted in response to the proposal information requirements. Examples of evaluation activities are provided in figure C-10-1.

Team Evaluation Areas	APML	LM	LEM
• Evaluation of competing contractors' proposals	X		X
• Evaluation of prime contractor's production proposals	X		X
• Evaluation of prime contractor's proposals (Order Clause)	X		X
• Evaluation of compliance with contract requirements	X		X
• Evaluation of the planned versus actual R&M data		X	-
• Evaluation of the accuracy of input data to <u>S</u> Analysis		X	-
• Evaluation of the accuracy of the <u>S</u> Analysis results		X	-
• Evaluation of the reasonableness of the Maintenance Plans		X	-
• Evaluation of the status of O-level transition	X		-
• Evaluation of the status of I-level transition	X		-
• Evaluation of the status of D-level transition	X		-
• Evaluation of the actual spares usage versus planned <u>S</u> Analysis	-	X	X
• Evaluation of the traceability between <u>S</u> Analysis and technical manuals	-	X	X
• Evaluation of the actual ATE run times versus predicted <u>S</u> Analysis	-	X	X
• Evaluation of the results of OPEVAL for update of <u>S</u> Analysis	X		-
• Evaluation of the results of 1st C/V deployment for update of <u>S</u> Analysis	X		-
• Evaluation of the results of 1 <sup>st</sup> 2 CONUS squadrons for update of <u>S</u> Analysis	X		-
• Evaluation of readiness and availability offenders	X		-

Figure C-10-1. The Role of the APML in Evaluations

### Evaluating Prime Contractor Proposals

Once the Systems Acquisition and Production contracts are signed, the APML periodically requests proposals from the contractor to perform work under the "order clause", provisioned line items. The APML team evaluates these proposals and prepares appropriate funding documentation and PRs for the services proposed by the contractor. Prior to production, the prime contractor submits his production proposal at the request of the Government. The APML also evaluates the adequacy of this proposal prior to ordering and funding it.

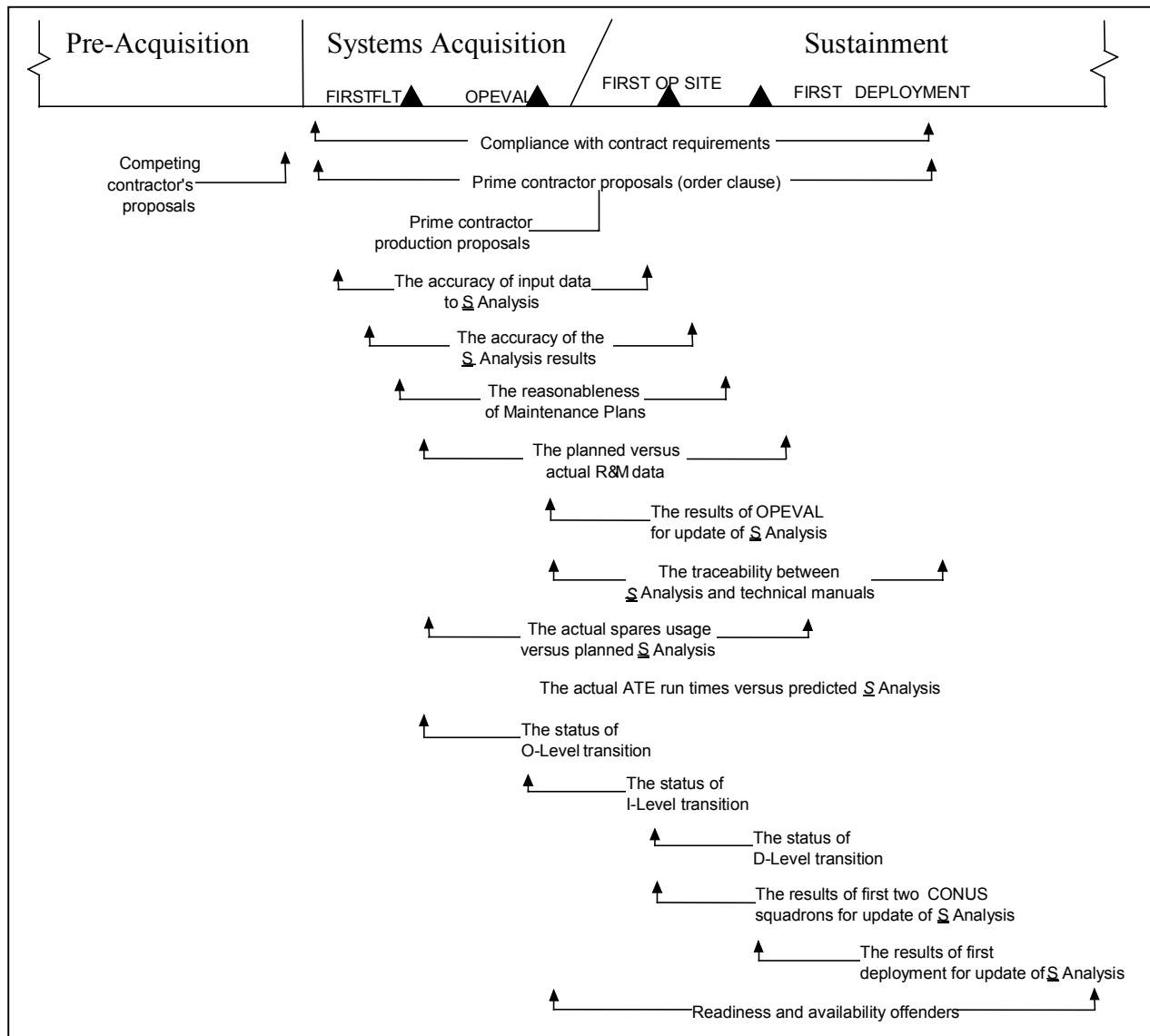
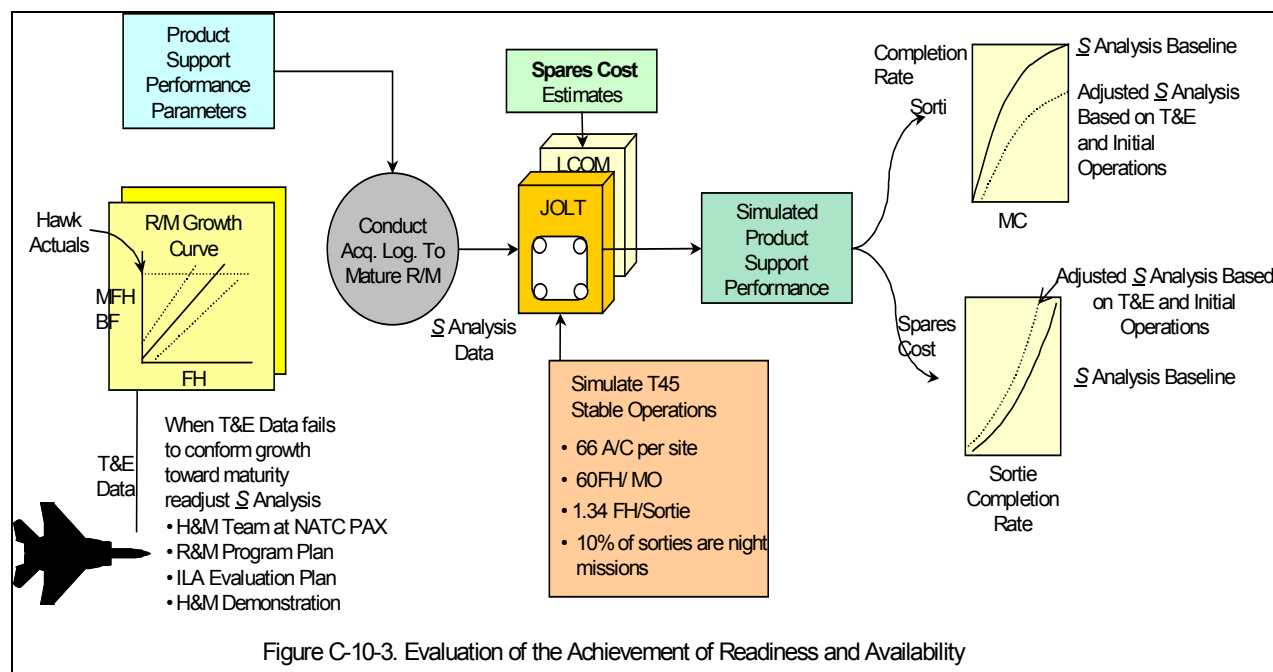


Figure C-10-2. The Generic Schedule for Evaluations

## Evaluating Analytical Data and Techniques

The APML team evaluates the accuracy of input data and techniques being used by the prime contractor to execute contract requirements (Performance Based Contracts desired). Imposing Performance Based Contracts does not necessarily mean that it will be properly applied. The APML team must periodically ensure that the contractor is performing to the performance based specification. The APML evaluates the accuracy of S Analysis output data and the reasonableness of the resulting Maintenance Plans. Aspects of this evaluation are assessing planned vs. actual R&M data because of the dependency of spares and manpower levels on these factors. The purpose of continually validating S Analysis data is to use the data as the basis for the next buy or outfitting. Likewise, data from OPEVAL through the first and second, deployment should be used to update S Analysis data.



## Evaluating the Adequacy of Product Support

**T&E:** The primary focus of support evaluation activities during this period is validating and verifying the product support program elements to ensure they meet the intended needs of the user as defined in the **ORD**.

**Site Activation:** Ensuring the **Site Activation Plan** is implemented and all requirements scheduled are in place 90 days prior to the first system delivery to the operational user.

**IOC:** Ensuring product support elements defined by the ORD are established, in agreement with the User, for IOC capability to be achieved. This includes the conduct of an **IOCSR**.

**FOC:** Ensure planning for the additional maintenance and support capability to include, Intermediate ashore and afloat, MSD, and depot requirements (NSD) are established.

**Sustainment:** Evaluations focus on ways to increase availability, improve supportability and reduce TOC. Meeting “Customer Expectations” for overall system performance and operational effectiveness.

- **PPSP:** Assessment of the plans to sustain the program in post production must be continuously updated to ensure planning reflects the changing acquisition environment and potential system evolutionary changes.

## APML ROLE –

- Ensure necessary evaluation requirements are established in the product support planning, ALSP
- Ensure support teams include the required evaluations in their individual functional element planning
- Establish or update processes to take advantage of lessons learned
- Ensure where applicable, product support issues are resolved so as not to impact system program success in meeting user's needs
- Evaluations for consideration include:
  - Milestone reviews
  - Prime/sub contractor proposals
  - Contract compliance
  - Planned versus actual R&M data
  - Supportability Analysis results, planned versus actual
  - DT&E/OT&E support validation and verification
  - Site activation
  - IOC, MSD, NSD
  - Readiness
  - Meeting customer expectations
  - Post production Support Planning

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			

## REF –

Acquisition Deskbook MIL-HDBK-502

Acquisition Logistics Handbook

NAVAIR Contracting for Supportability Guide

ILA Guide SECNAVINST 4105.1

MIL-PRF-49506 Logistics Management Information (LMI)

Post Production Support Planning (PPSP) Guide

Flexible Sustainment Guide

**LINKS –**

<https://www.nalda.navy.mil/>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/contract.html>

Contracting for Supportability Guide

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

<https://www.nalda.navy.mil/3.2/rcm/>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/lmi.html>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/ppsweb/ppspg.html>

Logistics Tool Box

<https://www.nalda.navy.mil/flexguide1.doc>

Logistics Tool Box

<http://web1.deskbook.osd.mil/default.asp>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[DSMC -- Acquisition Logistics Guide Third Edition December 1997](#)

<https://www.nalda.navy.mil/acquisition/mnaap1.html>

Logistics Tool Box

<https://qtrdeck.nalda.navy.mil/ioc/iocbas01.nsf>

Logistics Tool Box

<https://qtrdeck.nalda.navy.mil/navrit.nsf/User+Guide?OpenView&Count=500>

Logistics Tool Box

## C-11 - ACQUISITION LOGISTICS SUPPORT PLAN (ALSP)

**WHO** – APML, IPTs, Prime Contractor

**WHAT** –

- The **ALSP** provides the single overall plan for the management and execution of product support
- Fulfills the PSMP requirement specified in DoD 5000-2.R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)
- For Sample of ALSP and Guidebook see links below

**WHY** –

- Policy requires it
- Provides the integral product support strategy for the System program Acquisition Strategy (AS)
- Documents the approved plan for overall product support

**WHEN** –

- Milestone B program initiation and throughout the system life cycle
- Updated and approved ALSP required for each Acquisition Milestone review (ILA requirement)

**WHERE** – NAVAIR, Fleet, Prime Contractor

**HOW** –

- ALSP requirement, policy, content, approval process and management are provided by the ALSP Guidebook, see links below for website.
- It is the policy of NAVAIR to require adequate logistics planning.
- The document which identifies this planning is the ALSP.
- NAVAIR 3.1E is currently developing an instruction to identify the ALSP requirements.
- The instruction will include a companion guide available on the web site.



**APML ROLE –**

- Responsible for the content development, co-approval and update of the ALSP
- Initiate development of the total system support program requirements planning to be implemented throughout the system life cycle.
- Ensure planning includes requirements from the LMs, LEMs and IPT members
- Develop the ALSP to document all support requirements planning
- Distribute for comments and approval
- Distribute and sustain the signed ALSP
- Ensure ALSP periodic updates occur to reflect support program changes necessary for major MS reviews, assessments and overall support planning

**POC -**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	ALSP Guide Book	NAVAIR HQ	(301) 757-8233

**REF –**

- NAVAIRINST 4081.1
- DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

**LINKS –**

[https://www.nalda.navy.mil/3.6.1/alsp\\_news.html](https://www.nalda.navy.mil/3.6.1/alsp_news.html)

Logistics Tool Box

<http://dod5000.dau.mil/>

DoD 5000 Resource Center

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box

[NAVAIR Instruction 4081.1\(ALSP\)-](#)

[Department of the Navy \(DON\) Section \(Discretionary\) of Defense Acquisition Deskbook \(Reference Library\) February 12, 1997](#)

Appendix XI Acquisition Program Plans Formats (Discretionary)

[http://teamprocess.nawcad.navy.mil/competencys\\_java.cfm?COMPV=3.1](http://teamprocess.nawcad.navy.mil/competencys_java.cfm?COMPV=3.1)

Team Process Toolkit Process in NAVAIR: Pax River: 3.1

<http://teamprocess.nawcad.navy.mil/index.html>

Team Process Toolkit

## C-12 - PRODUCT SUPPORT ORGANIZATION

**WHO** – PM, APML

**WHAT** – The Program Manager/APML define and establish the product support team based on IPT structure. IPT Charters and Team Assignment Agreements (TAAs), with clear roles and responsibilities should be approved by the IPT and competency leads.

**WHY** – Ensures, the right amount of resources required, at the proper time, with the appropriate skills and training, in the right location, are available to execute the processes to produce and support the product.

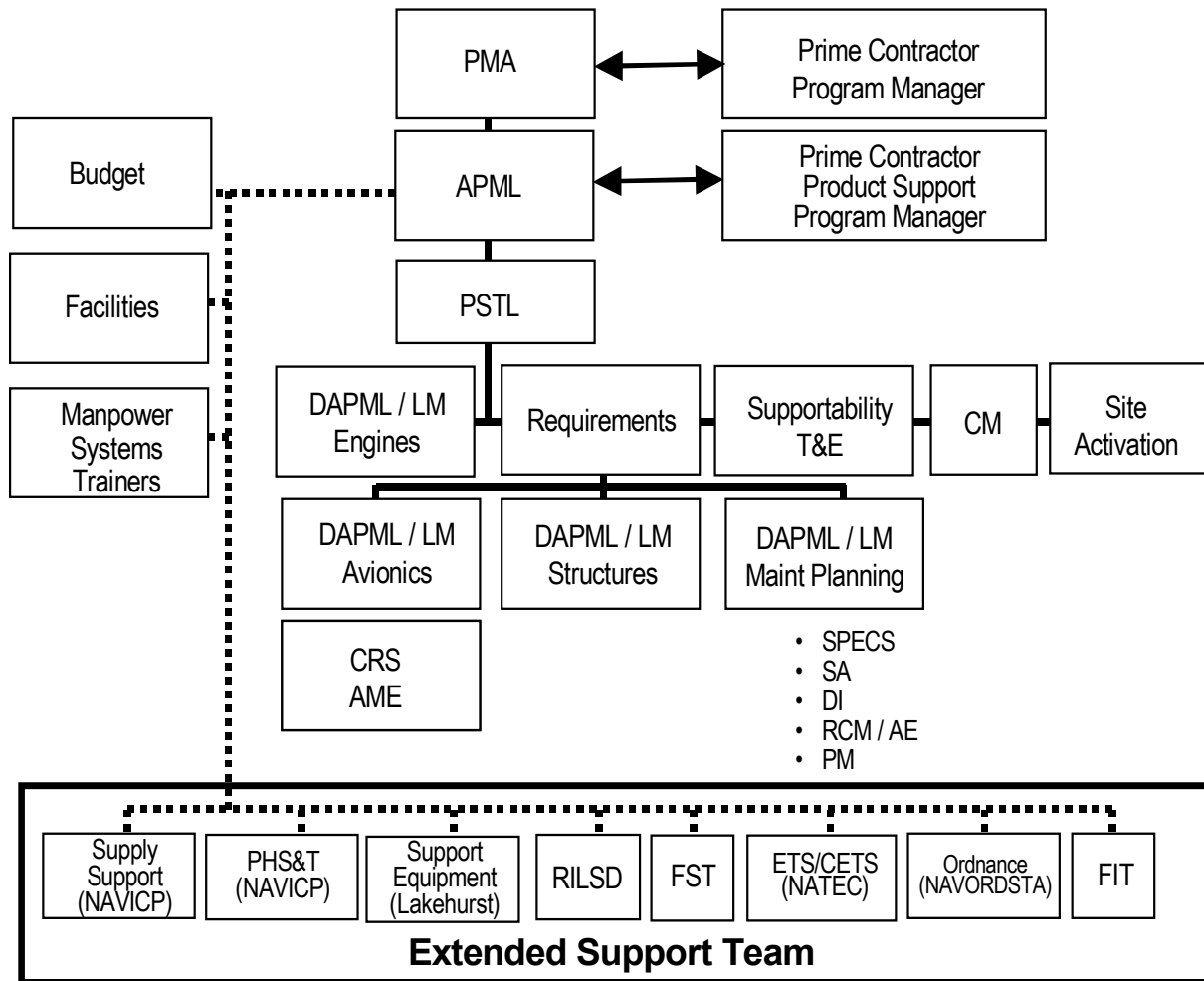
**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, IPTs, Prime contractor

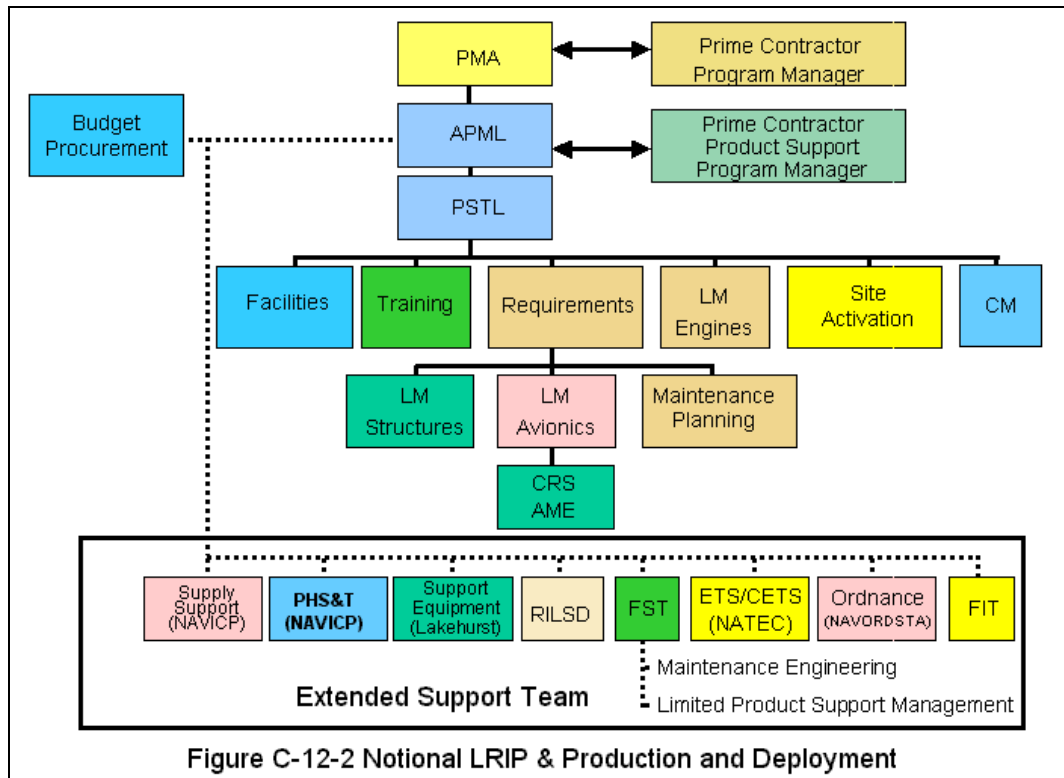
**HOW** –

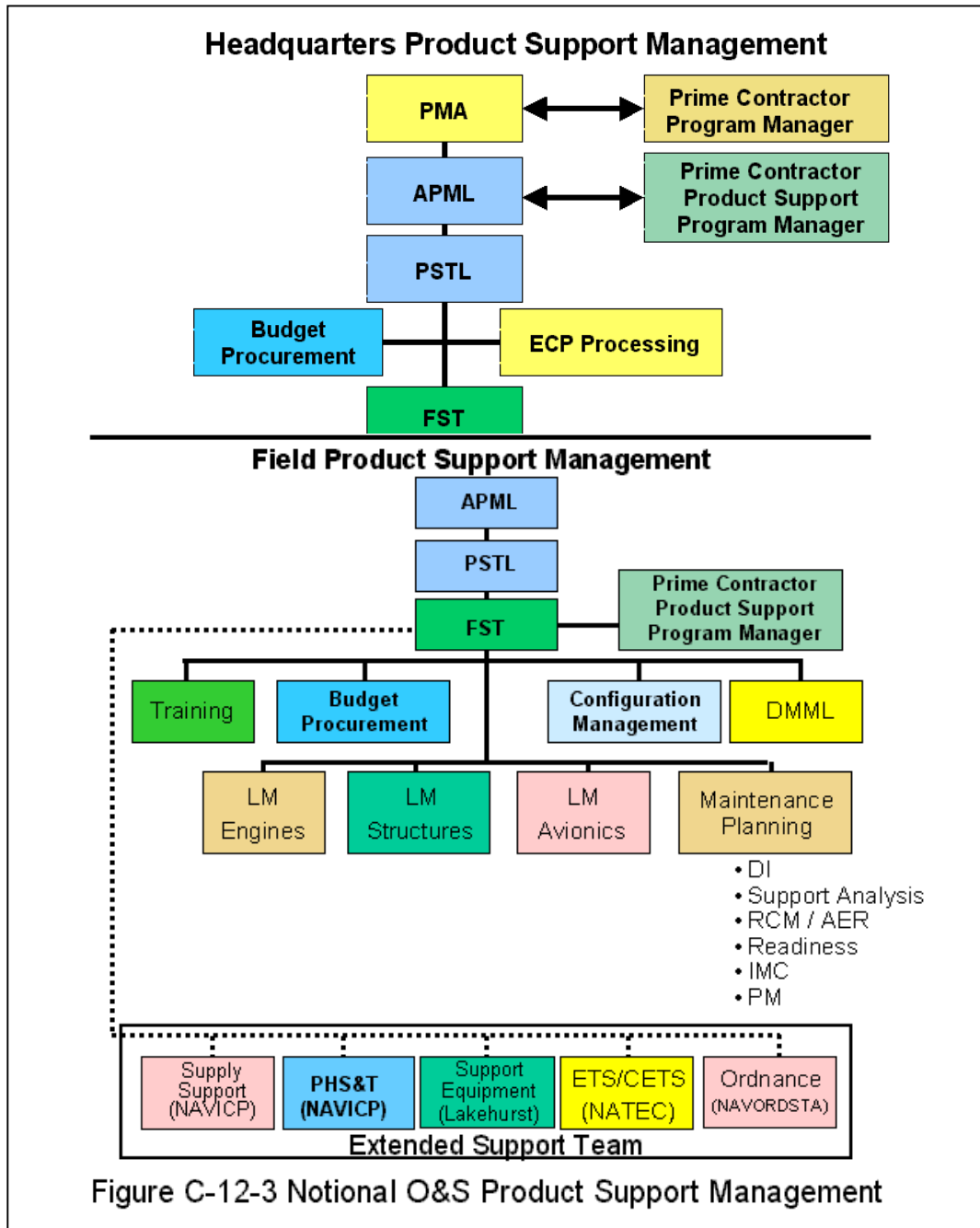
- Determine the system program organization structure with the PMA (Matrix or IPTs structure), based on system program phase and requirements (military & civilians)
- Acquire funding for positions (as applicable) based on initial requirements and growth
- Identify positions or IPTs
- Establish roles and responsibilities for team positions
- Identify team members for each position (fill positions from existing staff or initiate new hires)
- Develop Team Charters
- Develop Team Assignment Agreements (TAAs) for each team member
- Evaluate resources and adjust to system program phase and requirements

Examples of notional product support teams are provided below in figures C-12-1, C-12-2 and C-12-3, including the C-12-4 notional IPT chart;



**Figure C-12-1 Notional SD&D, LRIP Prior to Operations**

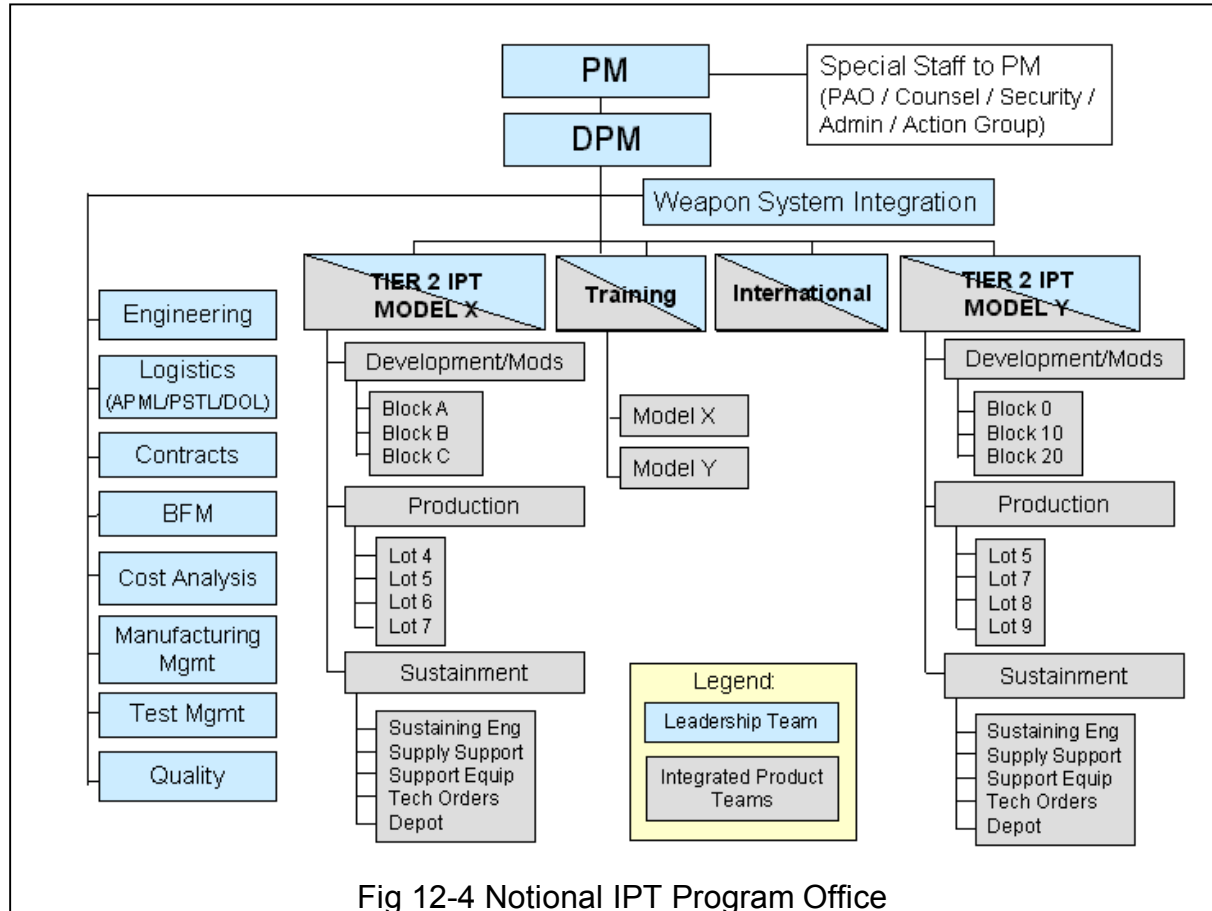




As the system program moves forward out of production, the APML should systematically re-evaluate the support team and or IPT member requirements.

Figure C-12-3 illustrates a transfer of functions from headquarters to the field. This leaves a small cadre of personnel in headquarters to coordinate budget and engineering change requirements and transfer the day-to-day functions of keeping the weapon system or equipment supported to the FST.

Figure C-12-4 illustrates a notional IPT organization for a system program with multiple product teams. Logistics members notionally would be assigned to each IPT based on team product requirements and need. In this case the Fleet Support Team for in-service and or fielded systems, is presented as the Sustainment IPT.



## APML ROLE –

- Review, update and or define the product support organization required to support the system program. Typical positions include the following but are usually modified depending on the program and team structure.

**Director of Logistics (DOL)** --- Senior Civilian Acquisition Logistician (GS-15) responsible and accountable for all acquisition/sustainment logistics efforts. He/she serves as the principal logistics advisor to the Program Manager. The major acquisition programs that have DOL's include the F/A-18, EA-6B, H-60, E-6A and V-22. Typically, the DOL's have logistics management and budget formulation/execution responsibility for other ACAT I, II, III and IV programs under them.

**Assistant Program Manager, Logistics (APML)** --- Senior Civilian Acquisition logistician (GS-14) responsible for assisting in the planning, budgeting, management, analysis and execution of multiple ACAT III and IV Integrated Logistics Support Programs. Supervisor of multiple Deputy APML's, acquisition logisticians (GS-13's).

**Deputy Assistant Program Manager Logistics (DAPML)** --- Acquisition logisticians (GS-13's), responsible for the logistics management of individual hardware items, acquisition elements or software systems (ie, airframes, engine, avionics, Supportability T&E etc). Supports the APML in planning, programming, budgeting, organizing and contracting for timely logistics support for that item or element designated as a single management item by the APML.

**Product Support Team Leader (PSTL)** --- Senior Civilian Acquisition Logistician (GS-14) that serves as the Deputy to a military Assistant Program Manager, Logistics (APML). Supports the APML in the planning, management, budget formulation and execution of the Logistics Program. Acts as the APML in his/her absence, and manages/supervises the programs logistics support team. This senior civilian/military logistics management arrangement exists on most all ACAT I aircraft acquisition programs, with direct responsibility for numerous ACAT III and IV acquisition projects.

**Logistics Manager (LM)** --- Responsible for criteria, technical justification, and establishment of the maintenance program in terms of scope, depth and frequency at all three levels of maintenance. Projecting maintenance workload, by site, in terms of removals, calibrations, repairs, and modification incorporation at each maintenance level. Coordinating logistics inputs to engineering change proposals (ECPs), development of approved ECPs into change technical directives with associated logistics support, and compliance with the change incorporation schedule and status. Maintaining the entire maintenance, logistics, and modification program in balance such that readiness is maximized and the most efficient use of resources is achieved. Areas could include modification

management, mobilization support, fiscal planning and execution, and supportability.

**Logistics Element Manager (LEM)** --- Responsible for planning, budgeting, financing, procuring and timely distribution of adequate quantities of specific support items/services to facilitate accomplishment of the maintenance plan; Maintenance of the support items/services throughout the equipment life cycle and to update the items/services as equipment modifications require; and Respond to logistics deficiencies/solutions as determined by readiness and availability improvement initiatives. The areas include the 10 ILS elements including Engineering and Technical Services.

- Ensure budget and funding resources exist to support organization
- Review IPT Charters and TAAs for allocating existing or acquired resources
- Identify training deficiencies and ensure required IPT members Individual Development Plans (IDPs) reflect requirements

#### **POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			

#### **REF –**

ALH MIL-HDBK-502

ALSP Guide

NAVAIR CAO/IPT “Rules of the Road” Guide for Leading Successful IPTs

#### **LINKS –**

<https://www.nalda.navy.mil/acquisition/oct99rules.doc>

Logistics Tool Box

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/alh.html>

Logistics Tool Box

[https://www.nalda.navy.mil/3.6.1/alsp\\_news.html](https://www.nalda.navy.mil/3.6.1/alsp_news.html)

Logistics Tool Box



## C-13 - DEVELOPING PRODUCT SUPPORT PERFORMANCE REQUIREMENTS

**WHO** – PM, APML, APMSE

**WHAT** – Supportability requirements expressed in performance terms

- For example, requirements that should be stated in performance terms include but are not limited to supportability, maintainability, availability, compatibility, transportability, interoperability, etc.
- Requirement: Any condition, characteristic, or capability that must be achieved and is essential to the end item's ability to perform its mission in the environment in which it must operate. Requirements must be verifiable.

Example: Logistics and readiness performance requirements stated in an Operational Requirements Document

(1) Reliability.

- (a) Mission. MFHBA shall be the primary measure of mission reliability. XXX aircraft shall have an MFHBA of 17 hours; XXX aircraft shall have an MFHBA of 15 hours (Threshold).
- (b) Logistics. MFHBF<sub>log</sub> shall be the primary measure of logistical reliability. Both variants shall have an MFHBF<sub>log</sub> of 0.9 hours (Threshold), 1.2 hours at system maturity (60,000 hours) (Objective).

(2) Availability.

Mission Capable (MC) Rates. A MC rate greater than or equal to 82 percent is required (Threshold)/greater than or equal to 87 percent is desired (Objective).

(3) Maintainability.

(a) MMH/FH<sub>Org</sub>.

A 20 hours or less MMH/FH<sub>Org</sub> is required (Threshold) an 11 hour or less MMH/FH<sub>Org</sub> ratio is desired (Objective).

(b) (Abort) MRT<sub>A</sub>. An MRT<sub>A</sub> of 4.8 hours (Threshold) is required.

(c) BIT. Specific BIT requirements are listed in Tables 1 and 2 below.

Parameters	Thresholds	Objectives
FD	70%	85%
FI	70%	85%
MFHBFA	1.4 hours	3.0 hours

Table 1.

Parameters	Thresholds/USSOCOM/P <sup>3</sup> I	Objectives/USSOCOM/P <sup>3</sup> I
FD	85%	90%
FI	85%	90%

Table 2.

(4) Mobilization and Surge Requirements. The XXX aircraft must arrive at a staging base within 72 hours of initial mobilization notification and launching within 12 hours of arrival at the staging base (Threshold).

(5) Combat Support Requirements.

(a) XXX aircraft design must provide ease of access for inspection and facilitate the rapid repair/replacement of aircraft components in the field.

(b) A rapid repair of minor battle damage capability by Organizational Maintenance Activity personnel in the field is required. Battle damage assessment and repair procedures will be incorporated into the IETMs (Threshold).

(c) Rapid mission turn-around (refuel only) is required to be completed by no more than two qualified personnel in 15 minutes or less (Threshold)/10 minutes or less (Objective).

**Example: Operational Suitability:**

Characteristic	Parameter	USMC Threshold	USMC Objective	USSOCOM Threshold	USSOCOM Objective
Reliability	***MTBF (Note 1)	$\geq 1.4$ hrs	$\geq 2.0$ hrs	N/A	N/A
	Weapon System Reliability (Note 2)	N/A	N/A	$\geq 77\%^*$	$\geq 84\%$
	***Mission Reliability (Note 3)	$\geq 85\%$	N/A	N/A	N/A
	MFHBA (Note 4)	$\geq 17.0$ hrs	N/A	N/A	N/A
Maintainability	***MTAT (Note 5)	$\leq 15$ min	$\leq 10$ min	$\leq 15$ min	$\leq 10$ min
	***MRT <sub>OMF</sub> (Note 6)	N/A	N/A	$\leq 7.0$ hrs	$\leq 5.0$ hrs
	***MMH/FH <sub>ORG</sub> /MR (Note 7)	N/A	$\leq 11.0$ hrs	N/A	$\leq 11.0$ hrs
	MRT <sub>A</sub> (Note 8)	$\leq 4.8$ hrs	N/A	N/A	N/A
	MCMT (Note 9)	$\leq 3.7$ hrs	N/A	N/A	N/A
	MFHBUM (Note 10)	$\geq 0.7$ hrs	N/A	N/A	N/A
Availability	***MC/A <sub>O</sub> (Note 11)	$\geq 82\%$	$\geq 87\%$	$\geq 82\%$	$\geq 87\%$
	FMC (Note 12)	$\geq 75\%$	N/A	N/A	N/A
Diagnostics	***FD/P <sub>CD</sub> (Note 13)	$\geq 70\%$	$\geq 85\%$	$\geq 70\%$	$\geq 85\%$
	***FI/P <sub>CFI</sub> (Note 14)	$\geq 70\%$	$\geq 85\%$	$\geq 70\%$	$\geq 85\%$
	***FA (Note 15)	$\leq 25\%$	$\leq 15\%$	$\leq 25\%$	$\leq 15\%$

\* JROC validated key performance parameters

\*\* Specific mission profiles may be found in the ORD

\*\*\* Denotes a XXX aircraft ORD derived parameter and threshold/objective value.

**Notes: For above table:**

1. MTBF is defined as the total flight hours divided by the total number of all failures and is calculated as:

$$\text{MTBF} = \frac{\text{Total Flight Hours}}{\text{Total Number of All Failures}}$$

where a system failure is any organizational level Maintenance Action Form (MAF) that has the following codes: (a) action taken code of B, C, or R; (b) transaction code of 11, 12, 23, or 25; (c) when discovered code is not an O, V, W, X, or Y; and the malfunction code is not conditional. All organizational level MAFs with an action taken code of R must also have an intermediate level MAF with an action taken code of B, C, or Z and not a conditional malfunction code.

2. Weapon system reliability (WSR) is the probability that a system will complete a specified mission, given the system was capable of performing so initially, and is calculated as:

$$\text{WSR} = \frac{\text{Number of Missions Completed Successfully}}{\text{Number of Missions Attempted}}$$

The mission starts when the crew gets to the aircraft and ends when the crew safely returns. Success of the mission will be based on satisfactory performance of Mission Essential Subsystem List (MESL) items during each phase of the mission. WSR is based on a 4 hour mission.

3. Mission reliability (MR) is the probability of completing a mission without an abort. An abort is one that prevents the XXX aircraft from continuing its mission. MR is calculated as:

$$\text{MR} = \frac{\text{Number of Missions Completed Without an Abort}}{\text{Number of Missions Attempted}}$$

The mission starts when the crew gets to the aircraft and ends when the crew safely returns. Success of the mission will be based on satisfactory performance of Mission Essential Subsystem Matrix (MESM) items during each phase of the mission. MR is based on a 3 hour mission.

4. MFHBA is defined as the total flight hours divided by the total number of aborts and is calculated as:

$$\text{MFHBA} = \frac{\text{Total Flight Hours}}{\text{Total Number of Aborts}}$$

where an abort is an hardware/software failure(s), or combination of hardware/software failure(s), discovered by the aircrew during the preflight or in-flight phases of the mission(s), that precludes the aircraft weapons system from completing its assigned mission. Success of the mission will be based on satisfactory performance of MESM items during each phase of the mission, supplemented by the operational experience and judgment of the Multi-service Operational Test Team (MOTT).

5. Mean Turn Around Time (MTAT) is defined as the mean time to complete refueling by no more than two qualified personnel during a rapid mission turnaround.

6. Mean repair time (operational mission failure) ( $MRT_{OMF}$ ) is defined as the total number of elapsed hours of corrective, on-system, active repair time which was used to restore failed systems to mission capable status after an Operational Mission Failure (OMF) occurs divided by the total number of Operational Mission Failures and is calculated as:

$$MRT_{OMF} = \frac{\text{Total Elapsed Time to Correct Operational Mission Failures}}{\text{Total Number of Operational Mission Failures}}$$

An operational mission failure is any failure during operating time which prevents the system from performing one or more mission essential functions. To perform mission essential functions, the aircraft must be able to launch for a Safety of Flight (SOF) mission with all systems/equipment required by the MESL. Elapsed time includes time for maintenance preparation, fault location and isolation, on board parts procurement, fault correction, adjustment and calibration, as well as follow-on checkout time. It does not include off board logistic delay time.

7. Maintenance man-hours (organizational) per flight hour ( $MMH/FH_{ORG}$ ) is the average number of maintenance man-hours at the organizational level required to support a system per flight hour and is calculated as:

$$MMH/FH_{ORG} = \frac{\text{Total Maintenance Man-hours to Perform All Organizational Maintenance Actions}}{\text{Total Flight Hours}}$$

$MMH/FH_{ORG}$  includes corrective and preventive maintenance for the common aircraft and core avionics.  $MMH/FH_{ORG}$  is a JORD term synonymous with the OTA common suitability term, Maintenance Ratio (MR).

8. Mean repair time (abort) ( $MRT_A$ ) is defined as the total number of elapsed hours of corrective, on-system, active repair time which was used to restore failed systems to mission capable status after an abort occurs divided by the total number of aborts and is calculated as:

$$MRT_A = \frac{\text{Total Elapsed Time to Correct Aborts}}{\text{Total Number of Aborts}}$$

Elapsed time includes time for maintenance preparation, fault location and isolation, on board parts procurement, fault correction, adjustment and calibration, as well as follow-on checkout time. It does not include back shop repairs or off board logistic delay time.

9. Mean Corrective Maintenance Time (MCMT) is defined as the total number of clock hours of corrective, on-system, active repair time due to all corrective maintenance divided by the total number of incidents requiring corrective maintenance and is calculated as:

$$\text{MCMT} = \frac{\text{Total On-Equipment Maintenance Time}}{\text{Total On-Equipment Maintenance Actions}}$$

where on-equipment refers to time/actions performed on the aircraft itself and includes maintenance preparation, fault location and isolation, on board parts procurement, fault correction, adjustment and calibration, as well as follow-on checkout time. It does not include back shop repairs or off board logistic delay time.

10. Mean Flight Hours Between Unscheduled Maintenance (MFHBUM) is defined as the total flight hours divided by the total number of incidents requiring unscheduled maintenance and, is calculated as:

$$\text{MFHBUM} = \frac{\text{Total Flight Hours}}{\text{Total Number of Unscheduled Maintenance Actions}}$$

11. Mission Capable (MC) rate is the percent of possessed time the aircraft is capable of performing at least one of its assigned missions and is calculated as:

$$\text{MC} = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}} \times 100$$

where uptime is the time the aircraft is capable of performing at least one of its assigned missions and downtime is the time the aircraft is incapable of performing any of its assigned missions. Capability to perform assigned missions will be determined based upon the contents of the MESM/MESL. MC is a JORD term synonymous with the OTA common suitability term,  $A_O$ .

12. Full Mission Capable rate (FMC) is defined as the material condition of all aircraft that indicates it could perform all assigned missions as defined in the MESM and, is calculated as follows:

$$\text{FMC} = \frac{\text{Full Mission Uptime}}{\text{Uptime} + \text{Downtime}}$$

where full mission uptime is the time the test aircraft was capable of performing all its missions as derived from the MESM and operational experience of the MOTT.

13. FD is the process by which the system can identify when and what functions of the system are not performing properly. FD is the ratio of the number of failures correctly detected by BIT to the total number of actual failures and is calculated as:

$$FD = \frac{\text{Number of Hardware Failures/Software Faults Correctly Detected}}{\text{Number of Confirmed Hardware Failures/Software Faults}} \times 100$$

FD is a JORD term synonymous with the OTA common suitability term, percent of correct detections given that a fault has occurred ( $P_{CD}$ ).

14. FI is the process of determining the location of a fault to the extent necessary to effect repair. FI is a measure of a diagnostic's capability to isolate the failure to a specified replaceable assembly and is calculated as:

$$FI = \frac{\text{Number of Failures/Faults Correctly Isolated}}{\text{Total Number of Failures Correctly Detected}} \times 100$$

FI is a ORD term synonymous with the OTA common suitability term, percent of correct fault isolation and correct fault location given correct detection ( $P_{CFI}$ ).

15. False Alarms (FA) rate is the probability that a diagnostic will indicate a failure when none has occurred. FA is calculated as:

$$FA = \frac{\text{Number of Incorrect Diagnostic Failure Indications}}{\text{Total Number of diagnostic Failure Indications}} \times 100$$

**WHY** – DoD policy mandates the use of performance requirements as the preferred method of preparing specifications. The specifications are imposed on the system developer and verified to ensure the system meets the intended needs of the user.

**WHEN** - Expressed as needs in the MNS and translated into requirements in the ORD at Milestone A. Iteratively reviewed and updated throughout the life cycle.

**WHERE** - USD (AT&L), ASN (RDA), PEO, PM, IPTs, Prime contractor

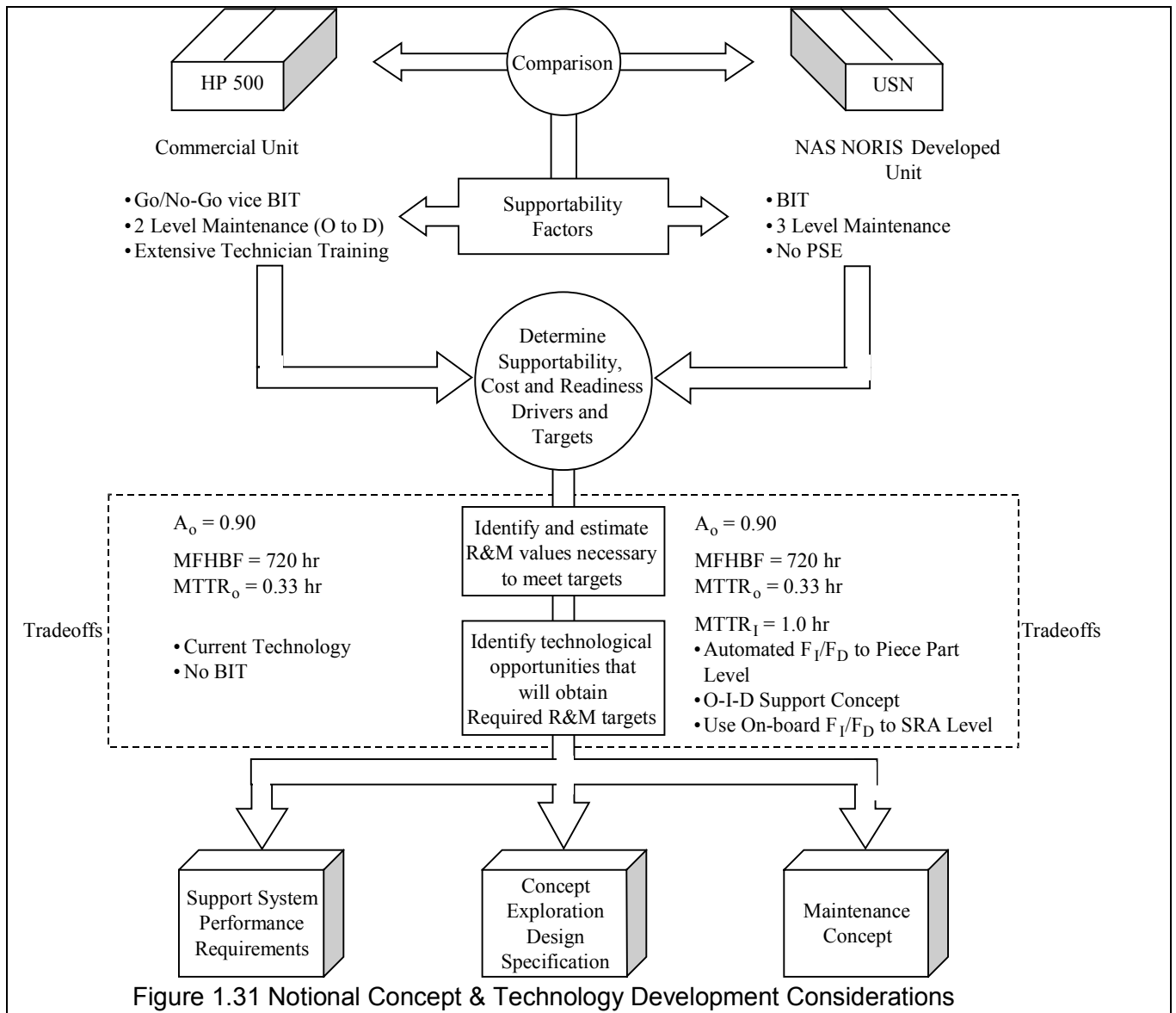


Figure 1.31 Notional Concept & Technology Development Considerations

### HOW – Process start:

Milestone A, Mission Need Statement (MNS): Included in the MNS are Product Support requirements consisting of supportability, cost, and readiness drivers, (including Manpower Personnel, Training (MPT)), alternative support and *Maintenance Concepts*, and readiness ( $A_o$ ) considerations.

Milestone B, ORD: Expresses the user needs from the MNS into operational requirements and identifies expected cost, schedule and performance criteria to measure achievement in the form of thresholds and objectives.

Examples of early product support influence which have life cycle effect on inherent design characteristics and cost effectiveness of the system solution.



## Concept Exploration

For the MNS that is being evaluated by Product Support, requirements for each alternative are prepared. An overview of the tasks performed during this phase is presented in the above Figure 1.31 and is summarized below.

APML/IPT tasks:

- Analyzes system development plans.
- Identifies Product Support resource constraints.
- Identifies early S Analysis strategy.
- Coordinates the initiation of TRPPM (with PMA-205 and AIR 3.4).
- Identifies Product Support R&D.
- Performs early Product Support cost analysis.
- Establishes Product Support inputs to program initiation.
- Develops the Product Support SOW for Concept Exploration and Component Advanced Development with matching contract line items and CDRLs.
- Determines whether ADR requirements apply to the new weapon system.

## Component Advanced Development

To effectively select the best support alternative and establish Product Support cost requirements, DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002) requires:

- Identification of Product Support resource (\$) constraints.
- Definition of an operational scenario.
- Identification of Product Support cost drivers.
- Estimation of achievable R&M values.
- Conducting trade-offs among design, Product Support concepts and Product Support resources.

Furthermore, the APML is provided a list of tasks by NAVAIR 00-25-406 to meet the S Analysis requirements of DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002). The tasks performed during Pre-System Acquisition require:

- Use Study Updates.
- S&I Approaches
- Developer Baseline Comparison System (BCS)
- Establish Technological Opportunities
- Establish Supportability Requirements
- Functional Analysis
- Support Synthesis
- Tradeoff Analysis.

Additionally, the Defense Acquisition Deskbook (DAD), Section 1.2.2.2.4, Develop Acquisition Approach, defines Product Support recommended support considerations by milestone.

**APML ROLE –**

- Develop measurable Product Support performance requirements expressed in desired outcomes (not the means or method which should be left to the contractor).
- Maintain continuous interface within the IPT structure to ensure supportability considerations are considered that will significantly lower O&S costs.
- Ensure product support specifications include adequate assessment of established requirements.

Identify areas of risk within the IPT for identification and resolution.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2	DI/Maintenance Planning	NAVAIR HQ	(301) 757-9123

**REF -**

Defense Acquisition Deskbook (DAD)

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

**LINKS –**

<http://dod5000.dau.mil/DOCS/Master.020405.Regulation.doc>

New DoD 5000 Resource Center

[DSMC -- Acquisition Logistics Guide Third Edition December 1997](#)

Part II The Logistics Program (Discretionary)

[MIL-HDBK-502 DoD Handbook -- Acquisition Logistics 30 May 1997](#)

Section 5: Supportability Analyses (Discretionary)

## C-14 – PRODUCT SUPPORT PLANNING

### WHO – APML

### WHAT –

- The continuous actions necessary for all phases of the system program to;
  - Develop the plans for support (ALSP)
  - Develop the schedules to implement the plans based on program and customer need (ALSP) (See Tab C-15)
- Develop required planning documents with corresponding schedules to ensure that the product support requirements meet the required customer expectations. Plans include;
  - Acquisition Logistics Support Plan (ALSP)
  - User Logistics Support Summary (ULSS)
  - Site Activation Plan (SAP)
  - Maintenance Plan (MP)
  - Supply Support Management Plan (SSMP)

### WHY –

- Ensures required support is available to meet the operational needs of the customer
- Provides ILS and management teams the ability to determine the status of planned and or scheduled activities and events against system and user need dates

### WHEN – Throughout the life cycle

### WHERE – NAVAIR, IPTs, Fleet, Prime Contractor

### HOW –

- The APML's primary plan for product support is the ALSP, with the corresponding schedules. The ALSP is developed early in systems acquisition and updated as the system program and product support requirements mature.
- Specific logistics element and management planning documents including those above are provided as TABs in the APML Handbook;
  - ALSP TAB C-11
  - ULSS TAB H-15
  - SAP TAB C-16
  - LRFS TAB D-05
  - Maintenance Plan TAB H-08
  - SSMP TAB J-05
  - Supportability analysis plan TAB H-12

**APML ROLE –**

- Ensure support program requirements are planned and scheduled
- Ensure required documents follow policy, format, content and approval criteria to meet all review requirements and operational fleet needs
- Ensure planning and scheduling reflect fleet interface and buy-in
- Ensure all documentation is kept current

**POC –** See specific Tabs in the HOW paragraph above.

**REF –** See specific TABs

**LINKS –** See specific TABs

## C-15 - PRODUCT SUPPORT SCHEDULING

**WHO** – APML, IPTs, Prime Contractor

**WHAT** – The timing of product support requirements including, identification, development, test & evaluation, delivery, site activation, deployment, and post-production support throughout the system program life cycle.

**WHY** – There are three major factors that must be considered when developing Product Support schedules:

- What (Logistics products)
- When (Need date)
- Where (Location)

**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, Fleet

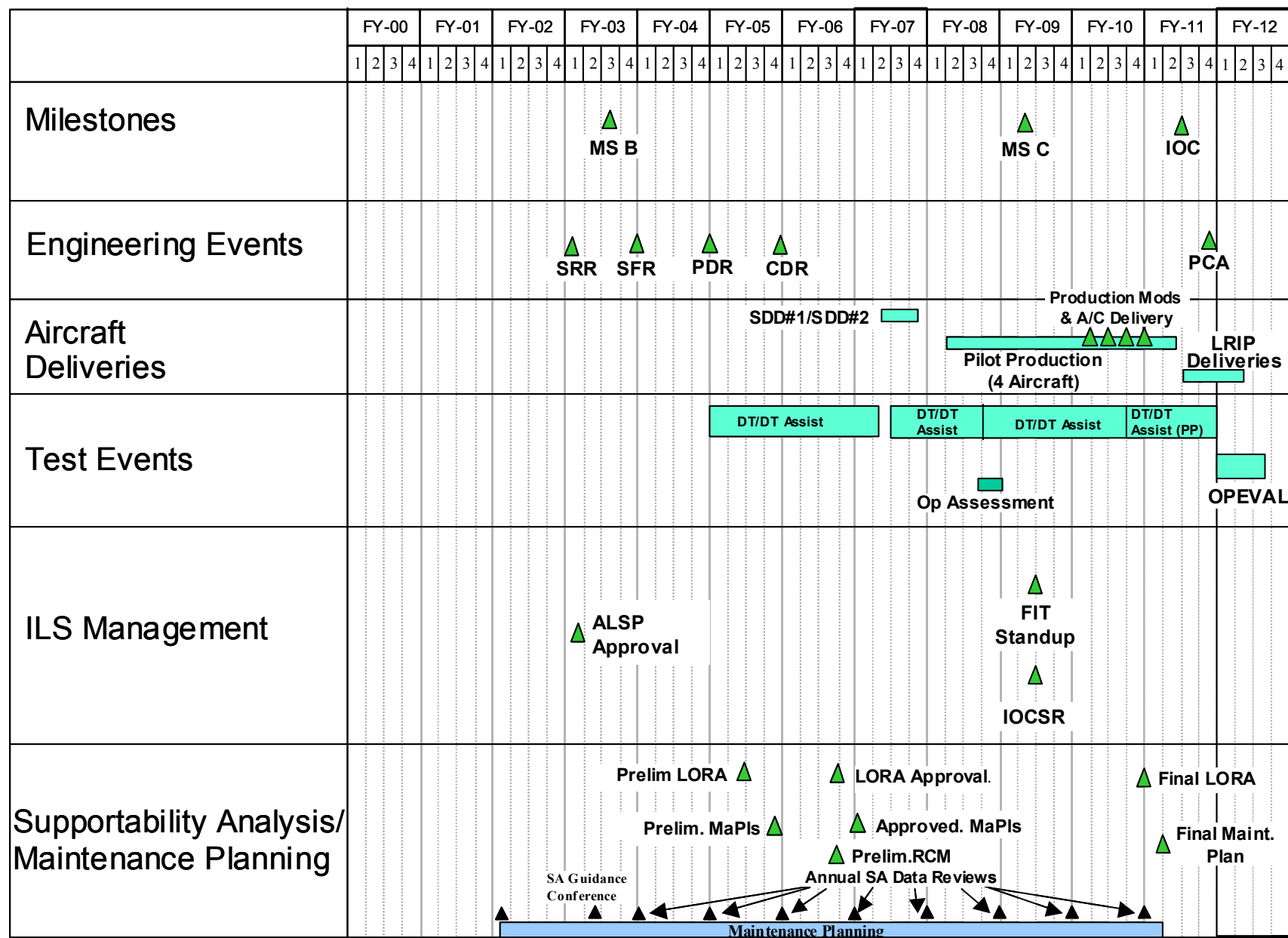
**HOW** - Execute the Acquisition Logistics Support Plan (ALSP) including the individual element, activities and event plans.

### APML ROLE-

- Initiate required product support schedules to track system program schedules and user need dates against planned product support schedules
- Perform periodic reviews to determine that support requirements achieve scheduled user need dates
- Schedules should be at a level of detail necessary to determine critical requirements and their interdependencies on other requirements
- Schedules provide vital information, allowing the APML to make management decisions avoiding major system program impacts in cost, schedule and performance areas

# Preliminary ILS Schedule

27 August 02



## 27 August 02

C-15-3

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			(301) 757-8256/9123

**REF –**

ALSP Guide

MIL-HDBK-502 DoD Handbook Acquisition Logistics (ALH)

DSMC Scheduling Guide for Program Managers

**LINKS –**

<http://web2.deskbook.osd.mil/data/003CMDOC.DOC>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box

[https://www.nalda.navy.mil/3.6.1/alsp\\_links.html](https://www.nalda.navy.mil/3.6.1/alsp_links.html)

Logistics Tool Box

[https://www.nalda.navy.mil/3.6.1/alsp\\_news.html](https://www.nalda.navy.mil/3.6.1/alsp_news.html)

Logistics Tool Box

<http://web2.deskbook.osd.mil/default.asp?>

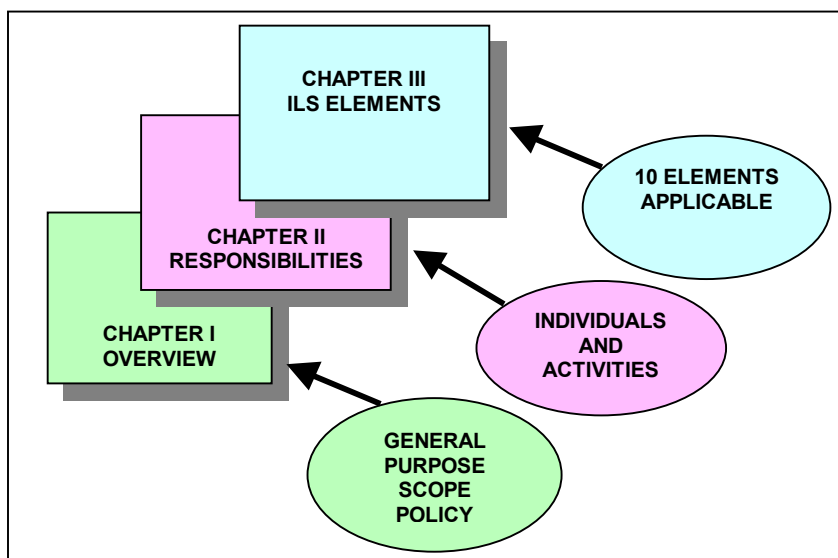
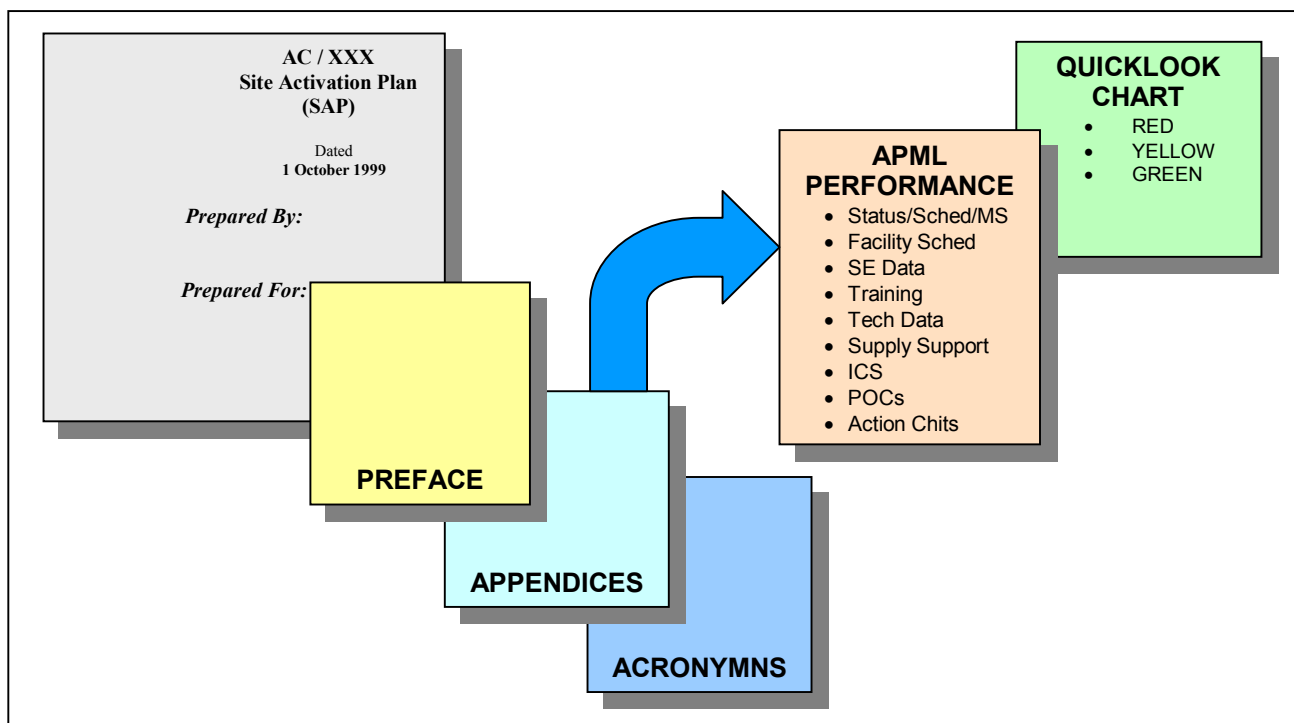
Acquisition Technology & Logistics (AT&L) Knowledge Sharing System



## C-16 - SITE ACTIVATION PLANS (SAP)

**WHO** - APML, Site Activation Team (SAT), Fleet, Prime Contractor

**WHAT** - Primary Logistics document for identifying all support elements required for activating planned sites IAW the Weapons System Planning Document for the system or equipment program.



The SAP constitutes the support requirements planning to be used by key personnel in establishing site support for the system or equipment being delivered to the fleet.

**WHY** - Ensures critical events and requirements are coordinated, communicated, and executed for operational site activation.

**WHEN** – Initiate site activation planning for initial sites prior to LRIP or FRP contract award.

**WHERE** - NAVAIR, TYCOM, Wing, Fleet Introduction Team (FIT)

**HOW** – Since the site activation plan is not a formal life cycle logistics support product no specific process document or policy exists for development. However, the magnitude of the system program may require the APML to establish a site activation manager. The primary responsibilities include planning and management of all system support requirements for activation of the operational sites ashore and afloat. If required;

- Identify Site Activation LM or responsible individual
- Initiate requirements through Team/IPT coordination and interface including the user, contractor and support team individuals
- Develop SAP (figures above provide notional format)
- Ensure review, concurrence, approval and distribution of the site activation plan
- Maintain and update SAP through interface with the ILS team, IPTs and User

**APML ROLE –**

- Provide for or develop the specific SAP for intended Weapon system or equipment.
- Maintain continuous interface with the user throughout the entire development process and after to ensure no stones are left unturned. (TYCOM, FIT, Wing)
- Document lessons learned for subsequent sites to eliminate impediments to smooth transition.
- Ensure the ULSS's are included either as an attachment to the SAP or as a separate product to maintain consistency with the intended support concept (see Tab H-15, ULSS).

**POC** - Designated Site Activation Manager or as determined by APML

**REF –**

NAMP OPNAVINST 4790.2 Series

AFSOC Instruction 21-106      Maintenance and Organization, Dated 27 Jan 1995

NAVAIRINST 4720.5A      Fleet Modernization Program (FMP); policy, procedure  
and responsibilities Dated 12 Jan 1983

**LINKS -**

[Department of the Navy \(DON\) Section \(Discretionary\) of Defense Acquisition  
Deskbook \(Reference Library\) February 12, 1997](#)

Annex A Users Logistics Support Summary (ULSS) (Format) (Discretionary)

## C-17 – TEAM WORK PLAN (TWP)

**WHO** – NAVAIR, APML, IPTs

**WHAT** –

- The funding and execution document for an IPT
  - It ties money to specific tasks
  - Lists hard products and/or services
- The means through which a program manager, using a task breakdown structure, secures an audit trail from the major system to the smallest product or service, and back up again
- The TWP is the summation of the required tasks to produce the product and overall APML budget reflected in the LRFS. The LRFS requirements are rolled up into the Program Managers TWP.

**WHY** –

- Intended to be the primary management tool used to organize, control and maintain accountability for technical work being performed on teams.
- Documents a program team's resource requirements (e.g., personnel, depot/special facilities, test assets, etc.) and the level of commitment of each competency to supply those resources, as well as the level of funding to be provided by the PMA for direct funded resources.
- It will state the work to be done for funding assigned, replacing the AIRTASK and WUAs which are used today.
- Contains detailed task descriptions in a "Task Breakdown Structure" for a three year period.
- The TBS is a variation on the WBS (refer to MIL-STD-881B, entitled "Work Breakdown Structures for Defense Materiel Items").
- The TBS is task-specific and more flexible than the WBS; it may be oriented to use any combination of product, site, function or appropriation, depending on the management needs of the team.
- The end product of the TBS will be the TWP, which will include all of the TBS tasks, task descriptions, and associated funding.

**WHEN** - IPT establishment, initiation, and / or Annual Review and update.

**WHERE** - NAVAIR, PM, IPTs**HOW –**

- Documenting a program team's resource requirements (e.g., personnel, depot/ special facilities, test assets, etc.) including;
  - The level of commitment of each competency to supply those resources
  - The level of funding to be provided by the PMA for direct funded resources.
- Stating the work to be done for funding assigned
  - Replacing the AIRTASK and WUAs which are used today.
- Containing the detailed task descriptions in a "TBS" for a three year period.
  - The TBS is a variation on the WBS (refer to MIL-STD-881B, entitled "Work Breakdown Structures for Defense Materiel Items").
  - The TBS is task-specific and more flexible than the WBS; it may be oriented to use any combination of product, site, function or appropriation, depending on the management needs of the team.
  - The end product of the TBS will be the TWP, which will include all of the TBS tasks, task descriptions, and associated funding.

***The following documents in conjunction with the TWP help to clarify the mission, function, and authority of the IPTs, as well as the membership of such IPTs, in helping the PMA to execute cost, schedule, and performance objectives set for the program by higher authority.***

***Program Operating Guides:***

- Describes processes for starting and operating IPTs
- Enumerates the IPTs elected to create and where the teams fit into the program team structure
- Addresses how the program team and its IPTs interact with the competencies, customers, and higher echelons in Navy and DoD
- Outlines the program team's vision in terms of an operating philosophy and goals and objectives for the next several years.

***IPT Charter:***

- Convey the expectations of the program team;
- Clearly state the scope of the new IPT's authority
- Specifically state-and in some measure, empirically-how success of the IPT will be evaluated
- Identifies customers
- States the amount and types of funds available to the IPT, and the kinds of expertise the team must have.

***Team Assignment Agreements (TAA):***

- Required for each resource (team member) assigned to the IPT
- Provides roles, responsibilities, objectives required by that member for the IPT
- Indicates how much of the person's time will be dedicated to the IPT that the Agreement concerns
- Collocation required
- Administrative requirements (performance, issue resolution, work schedules)

**APML ROLE –**

- Interface with program sponsor and initiate TWPs
- Review and or update for specific support requirements
- Validate and verify TWPs and LRFS for consistency
- Maintain tracking file for historical information

**POC** - PMA, APML, IPT lead, Competency lead, PEO (L)

**REF –**

MIL-STD-881B, entitled "Work Breakdown Structures for Defense Materiel Items")

Program Operating Guide (POG)

Integrated Program Team Manual Update, December 1996

**LINKS –**

<http://www.ntsc.navy.mil/Resources/Library/Acqguide/navipt1.htm#3>

NAVAIR Training Systems Division (TSD) – Enhancing Human Performance

<http://www.ntsc.navy.mil/Resources/Library/Acqguide/navipt1.htm>

NAVAIR Training Systems Division (TSD) – Enhancing Human Performance

<https://www.nalda.navy.mil/acquisition/oct99rules.doc>

Logistics Tool Box

<https://www.nalda.navy.mil/acquisition/>

Logistics Tool Box

<https://www.nalda.navy.mil/>

Logistics Tool Box

## C-18 - TURN-OVER FILE

**WHO –** APML

**WHAT –**

- *Not* a *formal* requirement
- Represents a “**PASS-DOWN**” for incoming APMLs of the support program

**WHY –** Provides the incoming APML an overall status of the support program

**WHEN –**

- APML turnover
- Competency and IPT lead changes where a program overview is requested

**WHERE –** NAVAIR

**HOW –**

- The “**TURN-OVER FILE**” is not limited, content is at the APML’s discretion.
- An example of topics, illustrated in Figure C-18-1 below, can include;

- System Program Summary (current PM brief)
- Logistics program summary;
  - ILS overview and schedule
  - Organization (gov’t & contractors)
  - LRFS summary (budget, funding, requirements)
  - Support contracts status
  - Top readiness degraders
  - Customer expectations
  - Outstanding actions
  - Correspondence (letters, messages)

Figure C-18-1 Typical Contents of a Turn-Over File



**APML ROLE –**

- Develop and maintain system program overview document (Experience validates the benefits of such a ready available tool for numerous occasions and circumstance)
  - Quick look program reference
  - APML pass-down or for other APML team members
- Potential sources;
  - ILSMT Brief
  - IOCSR Brief
  - MS Brief
  - Combinations of all (APML's choice)

**POC –** APML, PSTL, IPT lead for specific product or program team, and or PEO (L)

**REF –** NONE

**LINKS -** NONE

## C-19 - STATUS MONITORING

### WHO – APML

**WHAT** – Awareness and continuous observation by the APML, of the support program's progress against established plans including the following;

- ALS Planning
- Activities and events
- Schedules
- Budget and Financial Execution
- System Performance
- Risks

**WHY** – These plans and documents establish requirements that must be met if the maintenance capability and material support are to be achieved. The oversight of schedule, cost, and performance is feedback data to the APML's decision process.

- The acquisition process demands it
- A management rule
- Operational Tempo requires situational awareness at all times

**WHEN** – Throughout the life cycle

**WHERE** – NAVAIR, IPTs, Prime Contractor

### HOW –

- Major acquisition programs require the contractor to have a cost, schedule performance system to monitor status of program requirements. These systems provide a source of status and information up to delivery of the product to the government. Monitoring includes;
  - Designated individuals are assigned to track status and monitor contractor performance
  - Periodic reviews are conducted
  - Automated tools are employed including MS, Critical Path Method (CPM) or contractor unique
  - These include product support requirements as well
- Specific product support monitoring tools can also be used to provide continuous reporting of product support program elements, activities, events and schedules as required. Tools include;
  - CPM networks
  - Charts
  - Graphs
  - Summary reports

***No standard requirements exist for routine monitoring of product support program requirements, type, format and scope are at the discretion of the APML and team members.***

### **APML ROLE -**

- Employs/develops/updates selected methods of monitoring overall product support program elements and associated schedules for achieving ALSP objectives throughout the system life cycle.
- Ensures sufficient information is generated and remains resident in the APML team for providing management the necessary status of the overall product support program when required

### **POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	ALSP Guide Book	NAVAIR HQ	(301) 757-9123/8256/8253
	ILA Team	NAVAIR HQ	(301) 757-3085/3083

### **REF –**

ALSP Guide

MIL-HDBK-502 Acquisition Logistics Hand Book

### **LINKS –**

<https://www.nalda.navy.mil/actiontracking.html>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/alsp.html>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

[DSMC -- Scheduling Guide for Program Managers October 2001](#)

## C-20 - POST PRODUCTION SUPPORT PLAN (PPSP)

**WHO** – PM, APML, Prime Contractor

**WHAT** –

- ***Post Production Support Planning (PPSP):***
  - A joint endeavor shared by government and industry
  - Necessary insurance for DoD, in view of its diminishing industrial base.
- ***Post production support (PPS):***
  - The management and support activities necessary to ensure continued attainment of readiness and supportability objectives with economical logistics support, after cessation of production for the acquisition or modification of a major system or equipment.
- ***Traditional problems in a post production environment include:***
  - Obsolescence of equipment and aging technology
  - Diminishing manufacturing sources for spare parts and support equipment
  - Tool storage and disposition
  - Loss of expertise caused by the movement of experienced people
  - Diminishing appropriations to fielded systems vs. those in development
  - Structural fatigue
  - Component wear-out
  - Unique support requirements of foreign military sales customers

**WHY** –

- Required by the DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

**WHEN** –

- Occurs primarily during system development

**WHERE** – NAVAIR, FST, Fleet, Prime Contractor

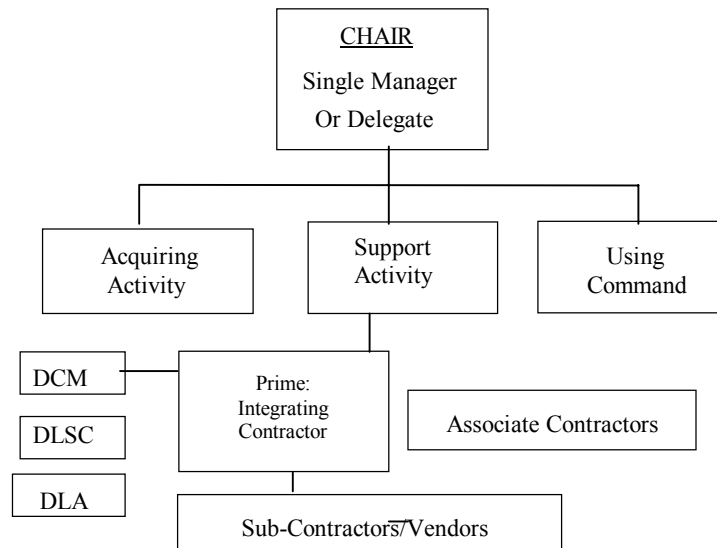
**HOW** – Obtain the PPSP Guide from the References and Links below;



## **JOINT SERVICE GUIDE FOR AVIATION POST PRODUCTION SUPPORT PLANNING**

### **APML ROLE –**

- Ensure supportability after production ends by establishing, validating and assessing post -production support requirements.
- Define contractor responsibilities within the Production Contract Statement of Work.
- Initiate the PPSP checklist of supportability factors, see Joint Service Guide, Appendix D to help develop post production support requirements for the statement of work.
  - Supply and repair factors
  - Components/parts availability
  - System life expectations
  - Pre-planned product improvement
  - Modification forecasts
  - Supply equipment deterioration
  - Support Equipment Tools and Test Fixtures (ST/STE)
  - Computer resources support
- The effect that ending production has on all the ILS elements should be carefully considered and the results of consideration/analysis judiciously applied to the PPSP.
- Ensure PPSP is executed
- The figure below is a recommended make-up of the team to research and prepare the PPSP.

**POST PRODUCTION SUPPORT INTEGRATED TEAM**

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2		NAVAIR HQ	
		AF, Wright Patterson AFB, OH	(937) 255-5535, x331, DSN 785
		ARMY, AMSAM-DSA-W	(205) 955-7709, DSN 7645

**REF -**

DoD 5000.2-R ( to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

DoD 4140.1-R, DoD Materiel Management Regulation

MIL-PRF-49506, Performance Specification Logistics Management Information (LMI)

MIL-HDBK-502, DoD Handbook Acquisition Logistics

DI-MISC-80508, Technical Report - Study/Services

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6.1/ppsweb/ppspg.htm>

Logistics Tool Box

<http://web2.deskbook.osd.mil/default.asp?>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[PPSP Checklist in MS Excel](#)

[PPSP Guide and Checklist in MS Word](#)

## C-21 – DECKPLATE

**WHO** – NAVAIR: PAX: 00/3.0/3.1.8/4.1, PM, APML, APMSE, FST, TYCOMs, Prime Contractor,

**WHAT** – “Naval Aviation’s Active Data Warehouse and Reporting System”

**WHY** – Provides managers a central source of integrated aircraft maintenance, flight, and logistics data providing:

- Consistent Information
- Current Information
- WEB-enabled
- On-line Data Dictionary

**WHEN** –

- Milestone A – November 2002
- Milestone B – November 2003
- Milestone C – November 2004

**WHERE** – NAVAIR: PAX: 3.1/4.1, PM, APML, APMSE, FST, TYCOMs, Prime Contractor,

**HOW** – See website for “HOW Tos” based on information required or desired.

**APML ROLE** –

Aware that “DECKPLATE” is available for accessing specific program data.



Model features include:

### **Aircraft Readiness Model (ARM)**

- Contains aircraft inventory and maintenance data for all Type/Model/Series aircraft as it is related to aircraft readiness.
- **10 Dimensions:** Date, Type Model, Command, CVW, Fleet, Homebase, Type Wing, Service, Op Status, and Validity.
- **51 Measures:** Include calculated data, RT79 Flight Summary data, and O-level Maintenance actions.

### **Component Analysis Model (CAM)**

- Intended for logisticians to analyze trends, identify potential maintenance problems, man-hours, and/or supply issues on Navy and Marine aircraft components.
- Contains aircraft inventory and maintenance data per TMS as it is related to components.
- **17 Dimensions:** WUC, Maint Level, Malfunction Code, Type Maint, When Discovered, Action Taken, Transaction Code, + ARM
- **14 Measures:** Include calculated data, RT79 Flight Summary data, and O-level Maintenance actions

POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.6		NAVAIR HQ	

**REF –** See link below for PPT presentation. Additional information forthcoming on specific guidelines for access and data use.

**LINKS –**

<https://www.nalda.navy.mil/>

Logistics Toolbox, click Training, click APML Training, click Library selections, click Deckplate presentation.

## C-22 - OPERATIONAL TEST READINESS REVIEW (OTRR)

**WHO** – OPNAV, COMOPTEVFOR, NAVAIR, PEO, PM, APML, APMSE, INSURV Board, Fleet, Prime Contractor

**WHAT** – The final review by the Development Authority (DA) prior to the DA's decision to certify the system for OPEVAL or FOT&E.

**WHY** – Before the Commander, Operational Test and Evaluation Force (COMOPTEVFOR), can commence any operational test and evaluation phase, the DA must certify the readiness of the system being evaluated to the Office of the Chief of Naval operations (OPNAV).

**WHEN** – The formal review and certification process for OPEVAL and FOT&E entails the following:

- Two Test Planning Working Group (TPWG) meetings:
  - Occur one month before and after the last DT&E phase before OPEVAL or FOT&E
  - Purpose is to identify all issues and deficiencies
- A preliminary OTRR (Pre-OTRR):
  - Purpose is to evaluate compliance with all certification criteria
  - Make a recommendation regarding the system's readiness for an OTRR
- An OTRR:
  - Final review by the DA prior to the DA's decision to certify the system for OPEVAL or FOT&E

**WHERE** – NAVAIR

**HOW** – See below reference NAVAIRINST 3960.2C and NAVAIR website version

## APML ROLE –

- Ensure required planning is initiated for support of Test and Evaluation (T&E) requirements and interface with the system program T&E IPT lead
- Attend or delegate to T&E supportability LM, all TPWG meetings.
- Ensure all support requirements have been adequately and accurately planned, IAW the OTRR checklist. (see NAVAIRINST and enclosures)
- Ensure contracts for support of test reflect resources and adequate funding.
- Attend and present if required all system program support aspects for the pre-OTRR and Formal OTRR meetings.
- Coordinate with the 3.1 competency lead (PEO(L)) on support program status and schedule for test period well in advance to ensure adequate coordination and briefing time if required

## POC -

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1O	T&E Policy and Guidance		
AIR-5.0	T&E		
	System Program T&E IPT lead		
	ILS Supportability Logistics Manager		

## REF –

DoD 5000.2R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

NAVAIRINST 3960.2C Test and Evaluation

## LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://web2.deskbook.osd.mil/default.asp?>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<https://directives.navair.navy.mil/>

Instructions and Notices

<https://www.nalda.navy.mil/documentation.html>

Logistics Tool Box

## C-23 – FLEET INTRODUCTION TEAM

**WHO** – TYCOM, APML, IPTs, Prime Contractor

**WHAT** – A Team of technically qualified fleet representatives whose purpose is to effect the orderly and economic introduction of major acquisition systems, hardware and equipment into the fleet.

**WHY** – Provides continuity, liaison, training, guidance and related support to commands directly involved with the fleet introduction of weapon systems, hardware and equipment.

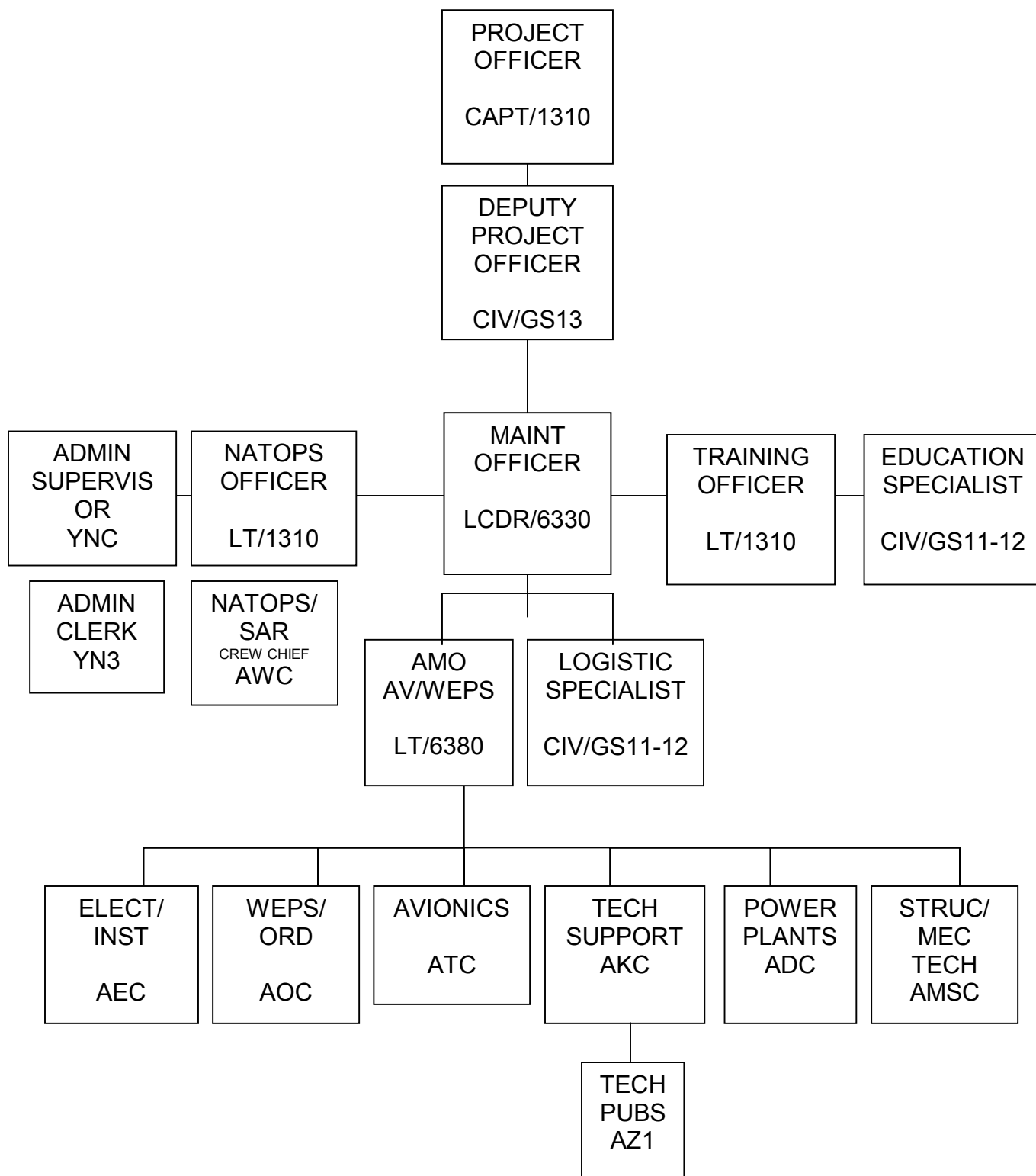
**WHEN** – Establishment should be early enough to ensure fleet team members are thoroughly familiar with the system, hardware or equipment, it's planned use and support concept necessary to ensure smooth transition to operational use.

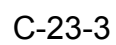
**WHERE** – NAVAIR, Fleet

**HOW** – Requirement established IAW OPNAVINST 3500.23C and OPNAVINST 1500.11G. The specific FIT Team establishment will be IAW approved Joint Type Commanders (TYCOMs) instructions. A notional FIT organization chart and FIT interface chart provided below. Additionally, an example of a FIT instruction is provided in the references and links below.

### APML ROLE-

- Initiate discussion, coordination and required interface with fleet representatives (TYCOM) for establishment of a FIT Team.
- Establish requirements and FIT Team identification and planning in the ALSP.
- Identify funding requirements if necessary and document in LRFS for budgeting.
- Include the FIT team as a primary user interface and representative throughout initial support planning and subsequent transition meetings, reviews and activities where fleet expectations are key.





**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			(301) 757-8256/9123

**REF –** OPNAVINST 3500.23C and OPNAVINST 1500.11G

**LINKS –**

<http://www.atlanticfleet.navy.mil/clfirst.htm>

COMNAVAIRLANT Instructions

<http://www.cpf.navy.mil/instructions.html>

COMNAVAIRPAC Instructions

## C-24 – RESIDENT INTEGRATED LOGISTIC SUPPORT DETACHMENT (RILSD)

**WHO** – APML, IPTs, Prime Contractor

**WHAT** – A Team of technically qualified fleet representatives chartered by the APML whose purpose is to maintain technical liaison with the prime contractor's supportability team members, logistics analysts, design engineers, and maintenance engineering personnel for the weapon system during supportability requirements development and transition to production and deployment.

**WHY** – Provides APML continuity, liaison, training, guidance and related support to contractor analysts regarding development of maintenance supportability requirements and capability from the user's perspective.

**WHEN** – Establishment should be early enough to influence supportability analyses for maintenance requirements development, Milestone B

**WHERE** – NAVAIR, FST, Prime Contractor

**HOW** – APML initiate discussion, planning and resource requirements within the support IPT for RILSD requirements and fleet manpower coordination and funding. Notional RILSD charter content/ format as follows:

### 1.0 Introduction

- Purpose
- Objectives

### 2.0 RILSD Organization

- Team composition
- On-site (contractor) members
- Scheduled members (military)
- Management relationships and interfaces
  - APML/RILSD
  - AIR-3.0/RILSD (billets)
  - RILSD/ Defense Contract Management Command (DCMC)
  - RILSD/Contractor

### 3.0 Duties and Responsibilities

- RILSD Lead
- Team members

### 4.0 Operating policies and procedures

- Limits of authority
- Status reporting
- Conflict resolution

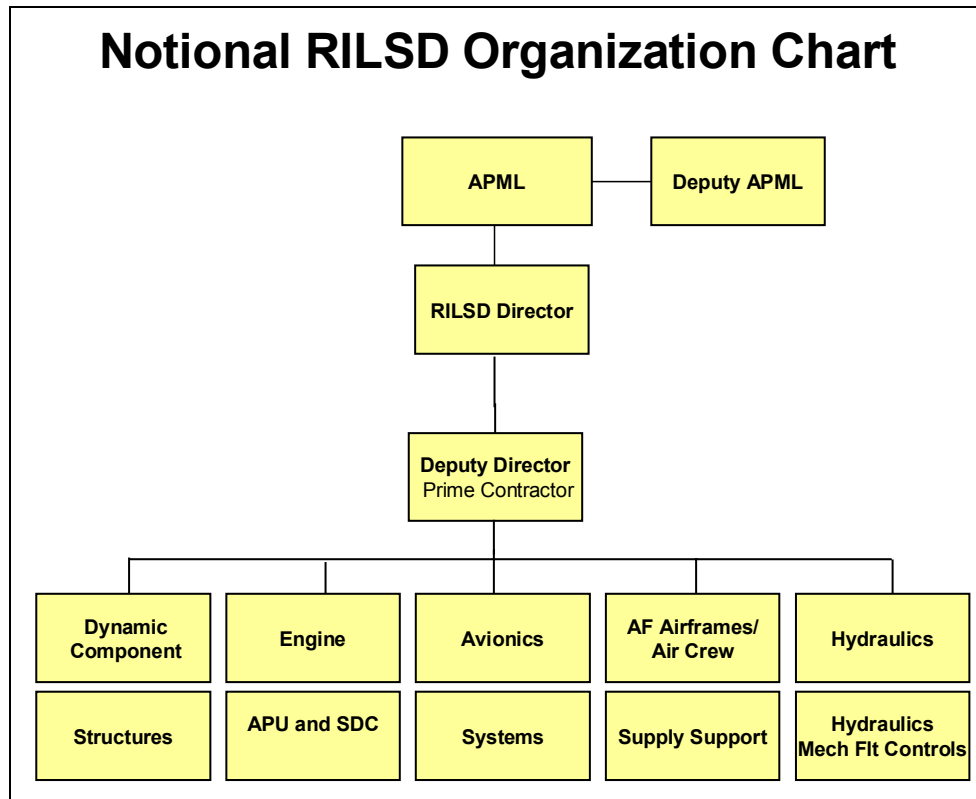
### 5.0 Deficiency reporting



6.0 Period of operation

7.0 Charter changes

- Organization (see Notional RILSD Organizational Chart below)



### APML ROLE-

- Initiate discussion, coordination and required interface with AIR-3.1 and Personnel/Manpower folks as appropriate on establishing requirements (NEC, MOS) for establishment of a RILSD.
- Establish requirements and RILSD identification and planning in the ALSP.
- Initiate, develop, approve and distribute RILSD Charter.
- Identify funding requirements if necessary and document in LRFS for budgeting.
- Include the RILSD as a primary user interface and representative throughout initial support planning and subsequent transition meetings, reviews and activities where fleet expectations are key.

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			(301) 757-8256/9123

REF – None

LINKS – None

## **APPENDIX D**

# **PLANNING, PROGRAMMING, AND BUDGETING SYSTEM**

### **Table of Contents**

D-1 - APPROPRIATIONS

D-2 - BUDGETING AND EXECUTION

D-3 - PROGRAMMING, BUDGETING, AND FISCAL ACCOUNTING

D-4 - PROGRAM RELATED LOGISTICS (PRL)

D-5 - LOGISTICS REQUIREMENTS FUNDING SUMMARY (LRFS)

D-6 – COST ADJUSTMENT AND VISIBILITY TRACKING SYSTEM (CAVTS)

D-7 - PROGRAM RELATED ENGINEERING (PRE)

## D - 1 APPROPRIATIONS

### WHO – APML

**WHAT** – Appropriations are categories of funds that have limited procurement latitude. The four appropriations that the APML uses most are RDT&E, APN, O&M,N, and MILCON

**Appropriation** -- A part of an Appropriation Act by Congress providing a specified amount of funds to be used for designated purposes.

**WHY** – The financing of services, hardware, and data involves appropriations.

**WHEN** – Annually, updated 3 times per year.

**WHERE** – OPNAV (N78)

### **HOW - Research Development Test and Evaluation (RDT&E):**

The RDT&E appropriations are broken down into the following categories (please refer to the bottom line in the new 5000 model):

- 6.1 Basic Research (inventive)
- 6.2 Exploratory Development (inventive)
- 6.3 Advanced Technology Development (innovative)
- 6.4 Demonstration and Validation (innovative)
- 6.5 Engineering & Manufacturing Development (innovative)
- 6.6 Management and Support (innovative)

During Concept Exploration, Component Advanced Development, System Integration, and System Demonstration, funding for Product Support Acquisition comes from category 6.3 or 6.4 even though portions of the avionics systems may be funded in budget category 6.1 or 6.2. ***RDT&E funds are valid for 2 years. Need to expend within two years.***

### **Aircraft Procurement, Navy (APN):**

- The APN appropriation is broken down into the following activities:
  - APN - 1 Combat Aircraft
  - APN - 2 Airlift Aircraft
  - APN - 3 Trainer Aircraft
  - APN - 4 Other Aircraft
  - APN - 5 Modification
  - APN - 6 Aircraft Spares and Repair Parts
  - APN - 7 Aircraft Support Equipment and Facilities

**APN-1** through APN - 4 are allocated for the specific procurement of new systems and the Product Support required for the operation and maintenance of these systems.

**APN-5** is used to fund modification of In-Service systems, engines, and SE. Procurement of change kits is also included under this activity.

**APN-6** funds spares and repair parts. This includes only contractor support, initial spares procured after demand data is developed, and initial spares required due to production line changes.

**APN-7** is used to fund Common Support Equipment (CSE).

**APN funds are valid for three years. Need to expend within three years.**

**Weapons Procurement, Navy (WPN):**

- The WPN appropriation is broken down into the following activities:
  - WPN - 1 Ballistic Missiles
  - WPN - 2 Other Missiles
  - WPN - 3 Torpedoes and Related Equipment
  - WPN - 4 Other Weapons
  - WPN - 5 Spares and Repair Parts

**WPN-1** funds procurement of fleet ballistic missiles, ancillary checkout and test equipment, and missile modifications, Support Equipment, and industrial facilities.

**WPN-2** funds procurement and modification of guided missiles and aerial targets required for Navy and Marine Corps aircraft and Navy ships, as well as procurement and support of naval space satellites and weapons industrial facilities.

**WPN-3** funds procurement of torpedoes, mines, underwater targets, and related equipment, modification of torpedoes and related equipment, and torpedo Support Equipment.

**WPN-4** funds procurement of guns and gun mounts and associated modifications.

**WPN-5** funds procurement of spares and repair parts for Navy weapon systems.

**WPN funds are valid for three years. Need to expend within two years.**

**Other Procurement, Navy (OPN):**

- The OPN appropriation is broken down into the following activities:
  - OPN - 1 Ships Support Equipment
  - OPN - 2 Communications and Electronics Equipment
  - OPN - 3 Aviation Support Equipment
  - OPN - 4 Ordnance Support Equipment
  - OPN - 5 Civil Engineering Support
  - OPN - 6 Supply Support Equipment
  - OPN - 7 Personnel and Command Support Equipment

The OPN appropriation funds procurement, production, and modernization of Support Equipment and materials not otherwise provided for in the other procurement appropriations (APN, WPN, and Shipbuilding and Conversion, Navy (SCN).

**OPN-3** funds are for procurement of new air-launched anti-submarine items, air-launched weapons (except for air-launched Antisubmarine Warfare (SW) weapons and guided missiles), and other aviation oriented Support Equipment meeting investment criteria which is not funded elsewhere.

***OPN funds are valid for three years. Need to expend with in three years.***

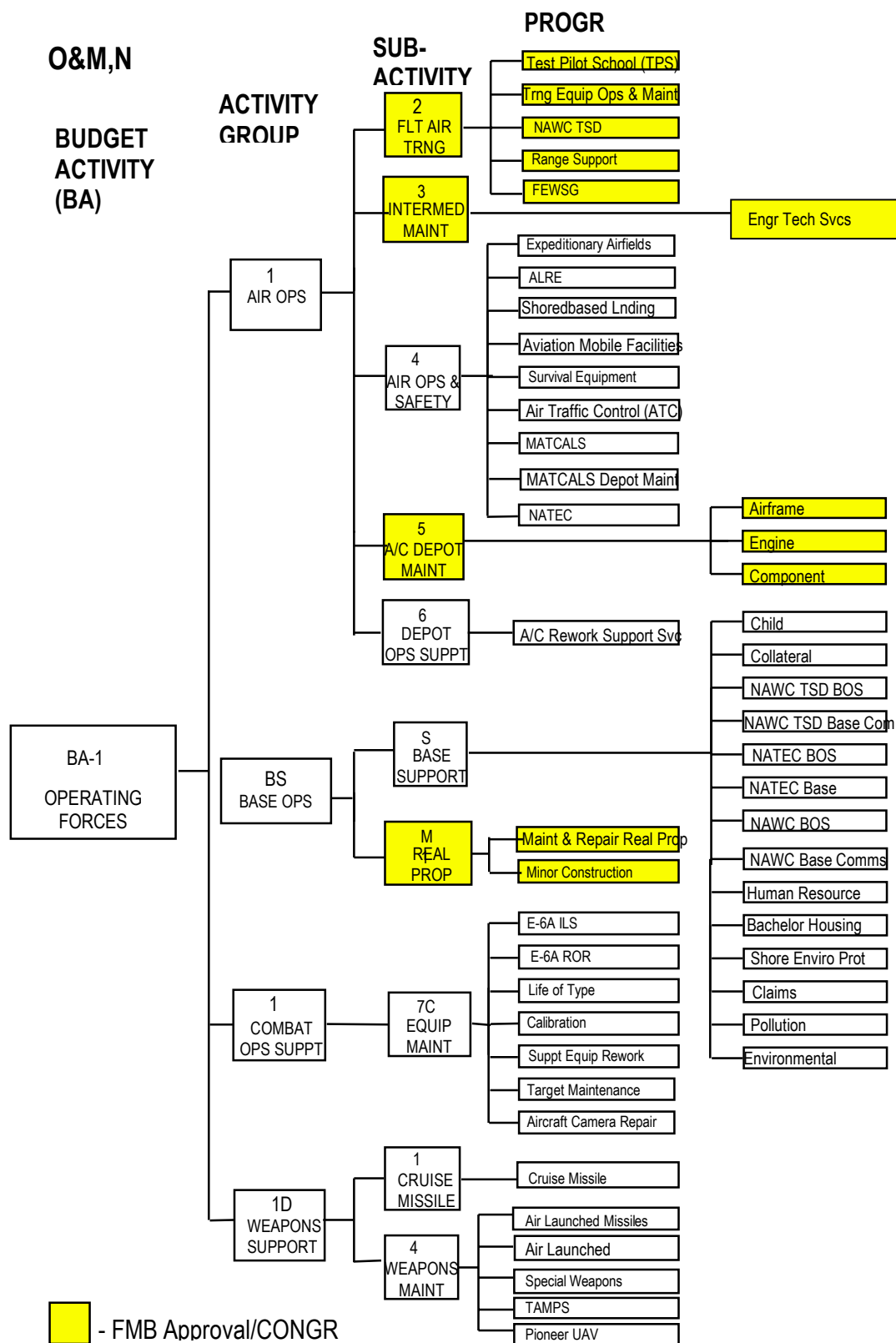
***Operations & Maintenance, Navy (O&M,N):***

- The O&M,N appropriation is broken down into the following Budget Activities (BAs):
  - BA 1 Strategic Forces
  - BA 2 General Purpose Forces
  - BA 3 Intelligence and Communications
  - BA 4 Administrative Services Support
  - BA 7 Central Supply and Maintenance
  - BA 8 Training, Medical and Other General Personnel Activities
  - BA 9 Administrative and Other Associated Activities
  - BA 10 Support of Other Nations

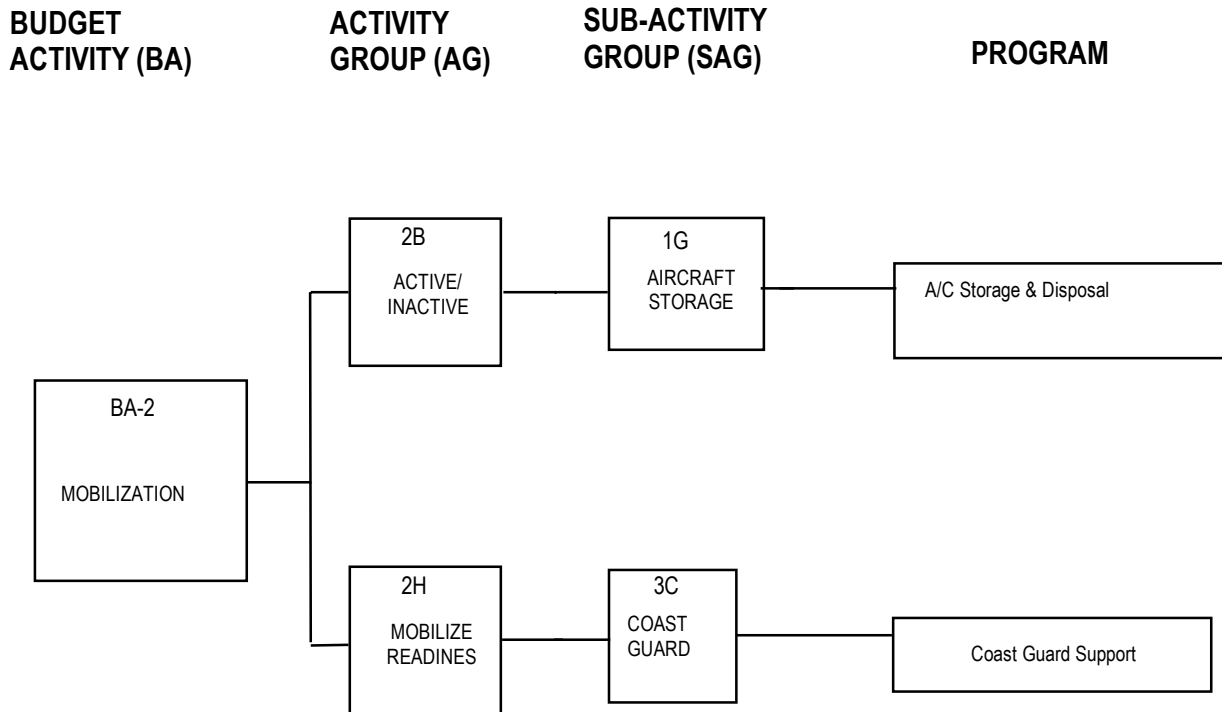
**BA1** provides for the operating costs of nuclear Fleet Ballistic Missile (FBM) submarines and supporting submarine tenders that provide alongside upkeep and other support craft. Also included are the overhaul, repair, maintenance, and modernization of FBM ships and on-board strategic weapon system equipment, associated technical services, testing, and specialized crew training.

**BA2** General Purpose Forces are assigned the mission of conducting strike operations to ensure control of the sea and air. Included are ships, aircraft, and a network of shore installations and commands. This BA funds ship and aircraft operations, ship overhauls, alterations, installation of equipment, repairs, maintenance, and technical support. Also provided for is the operation and support of shore installations, such as air facilities, ranges, and Naval stations.

**BA3** funds Strategic and General Purpose Forces in cryptology, general defense intelligence, communications, and special activities such as oceanographic and weather programs. This BA provides for secure cryptologic communications, intelligence processing, assessments and analysis, leased communications circuits and other communications services, oceanographic and weather environmental services, operation of the Naval Investigative Services and Naval Observatory, and automatic data processing for the World Wide Military Command and Control System.

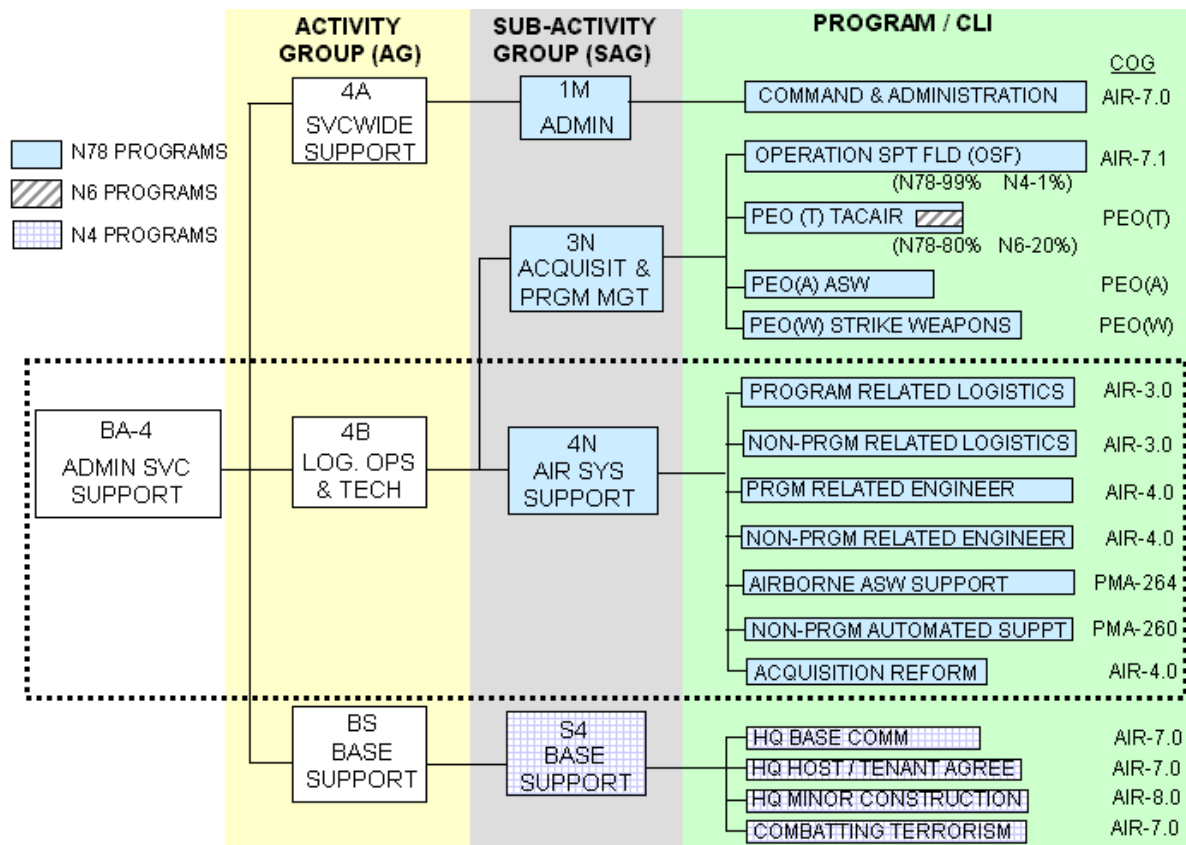


## O&amp;M,N



**BA4** funds; all service wide administrative support for command and administration; Logistics Operations and Technology, including acquisition program management for PEOs and Operation Support Field; Air Systems Support including, PRL and Non-PRL, PRE and Non-PRE, Airborne ASW support, Non-Program Automated support, Acquisition Reform and CMIS; and Base Support including, Headquarters Base Communication, Host Tenant Agreement and Minor Construction.

**BA7** funds all centrally managed supply, maintenance, and technical support for the operating forces and shore establishment. This BA encompasses both the support of current forces and management of the development and acquisition of future Naval forces. The programs within this activity are managed by commands assigned technical functional specialties.



**BA8** funds the operation of training facilities for the training and education of Naval active duty and reserve personnel, personnel of other services in schools for which Navy is responsible for common type specialist training, foreign and civilian students on a space available basis, health care for active, retired, and dependent personnel, and general personnel support such as recruiting, career counseling, morale, welfare, recreation, and human resource management.

**BA9** funds Navy administration, service-wide support and manpower management activities and a number of general and special support programs. Included are the headquarters staffs of the Secretary of the Navy and CNO, finance activities, the Naval Audit Service, civilian and military centralized personnel services, payments to the General Services Administration, and the U.S. Postal Service, and special programs such as White House Helicopter Support.

**BA10** funds International Military Headquarters and Agencies, Military Assistance Advisory Groups (MAAGS), Missions and Defense Attached Offices. These funds expire after one year.

**O&M,N** funds are valid for 1 year. Need to expend with in two years.



**Military Construction (MILCON):**

- MILCON is broken down into the following activities:
  - MILCON Planning and Design. To identify requirements incident to the planning for and design of new or modified facilities during all stages of the acquisition cycle.
  - MILCON. All programs that are to be funded in the Military Construction appropriation. Include all MILCON programs that are required at any shore or repair facility or any training location for supporting the new acquisition program. Funding should be identified by project number and Unit Identification Code (UIC), PID number, or IC and valued at over \$500K.

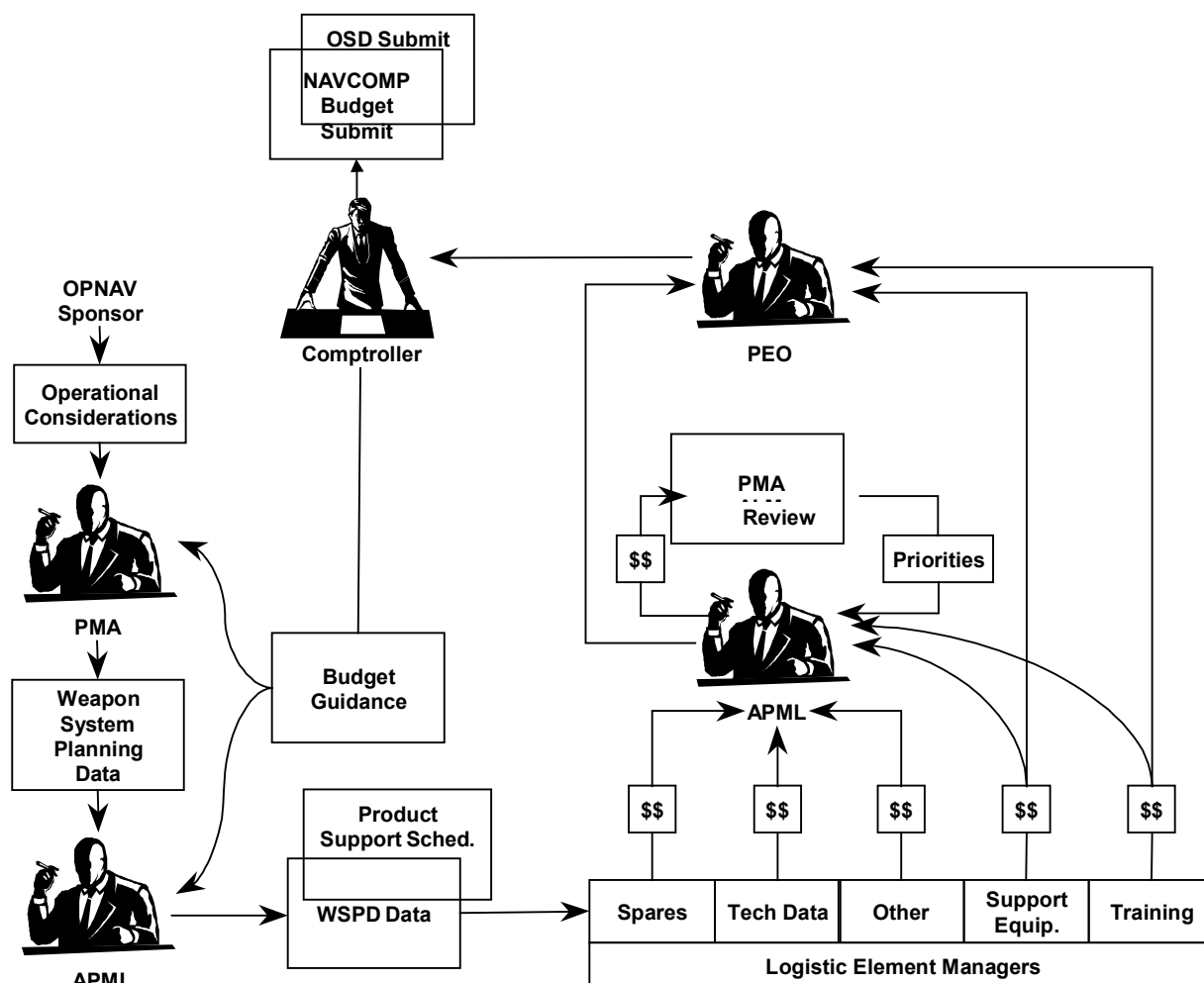
**MILCON funds are valid for five years. Need to expend with in two years.**

**Logistics Requirements Funding Summary (LRFS):**

Figure D-1-2 provides an example of the proper appropriation being used for a specific product support requirement.

Weapon System Summary Funding Profile (FYDP \$M)									
Support Summary		FY07	FY08	FY09	FY10	FY11	FY12		
1. Maintenance	Required	--	--	2.433	1.910	2.908	6.389		
	Funded	--	--	1.153	0.701	0.928	1.884		
2. Technical Data	Required	5.000	48.500	46.600	25.400	24.125	22.800		
	Funded	5.000	38.455	46.485	25.400	24.125	TBD		
3. Supply Support	Required	--	81.355	75.152	71.053	92.070	66.325		
	Funded	--	78.848	58.529	133.667	48.928	TBD		
4. Support & Test Equipment	Required	1.400	83.727	78.604	71.419	83.074	46.353		
	Funded	1.400	60.135	36.798	43.136	83.074	TBD		
Support and Test Equipment									
Product Support Function	APPM	Program Identification	RS	FY-09 Req'd	FY-09 Fund	FY-10 Req'd	FY-10 Fund		
Support and Test Equipment		TOTAL		78.604	36.798	71.419	43.136		
Peculiar			PMA-260						
Common Test Equipment	APN-1	31011300141AC Peculiar Airplane	N-78	8.074	2.010	8.625	4.108		
	APN-1	31011300141AC Peculiar Engine	N-78	7.621	6.411	8.336	8.064		
	APN-1	31011300141AC Peculiar Avionics	N-78	16.154	16.366	18.174	13.525		
Special Test Equipment	APN-1	31011300141AC Airframe STE	PMA-260 N-78	12.756	3.176	11.899	3.667		
Test Program Sites		31011300141AC Airframe TPS	N-78	26.397	6.572	16.446	7.835		
Tools, Jigs, Fixtures									
Calibration									
Calibration Standards			PMA-260						
Analysis, Studies Plans, Data	APN-1	31011300141AC Airframe Sustaining	N-78	7.117	1.772	7.431	3.539		
		31011300141AC Avionics Sustaining	PMA-260 N-78	0.485	0.491	0.508	0.378		

Figure D-1-2 LRFS Budget and Backup

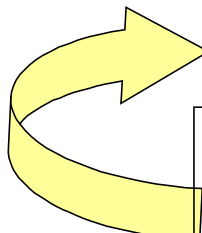


## BUDGET SUBMISSIONS

In addition to the LRFS, the APML prepares the budget submission and backup data provided by the LEMs and LMs and immediate logistics team members. This process is illustrated in Figure D-1-3.

The role of the APML in this process is to provide program data to the LEMs, ensure LEM submittals meet planned maintenance capability and material support dates, and maintain acceptable levels of backup data. The integration of the budget input was is still required. This integration results in part of the budget backup data. For example, Figure D-1-4 displays budget requirements, the schedule for the funds, and the backup for an elected Product Support function, SE.

Support Budget (\$M) (TT\$)					
Aircraft: JSF			Date: 4-18-05		
Purpose: APN Total			WSPD: 4-5-05 (Draft)		
Budget Line Item: All			Type Of Contract: FFP		
Appropriation: APN (POM-07)			Escalation Rate: IAW Air-801 Memo 7000DTD		
Line Item	Item	06	07	08	09
12.	Airframe JSF	.0000	.0000	38.7500	44.1076
13.	Engine JSF	.0000	.0000	6.8000	6.2000
14.	Avionics JSF	.0000	.0000	18.0950	12.8900
15.	Peculiar Training Equipment	.0000	57.0160	96.4570	33.6320
16.	Publications/Technical Data	.0000	.0000	31.2000	58.5000
17.	Prod Spt./Systems Engineering	.2500	3.1830	26.2150	27.3270
18.	ADP Software	.0000	.0000	12.1376	10.1017
27.	Initial Spares (1)	.0000	.0000	95.6210	103.2050
Total		.2500	60.1990	325.2756	259.9633



- a. Sustaining Engineering
- b. Radar WRA Support, RADCOM
- c. CFE System WRA Support
- d. SRA Support
- e. O-level Equipment
- f. Site Activation
- g. Depot Equipment
- h. PSE Product Support

- What squadrons are to be supported by this Support Equipment?
- What sites/squadrons does this support?
- What year is delivery scheduled?

Figure D-1-4 Typical APN Budget Submission and Backup Data

**APML ROLE** – Interface with the BFM to ensure requirements, funding and appropriations are synchronized to prevent lost time or missed opportunities at the budget review table

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-10.0	BFM Policy		

### REF –

OMB Circular A-11; Preparing and Submitting Budget Estimates

DoD 7000.14-R -- DoD Financial Management Regulation

NAVAIR Team Acquisition Guide

### LINKS –

[OMB Circular A-11 Preparing and Submitting Budget Estimates July 19, 2000  
https://www.nalda.navy.mil/3.6.1/lrfs2.html](https://www.nalda.navy.mil/3.6.1/lrfs2.html)

## D-2 - BUDGETING AND EXECUTION

**WHO –** APML, BFM, IPTs

**WHAT –**

One of the APML's primary management functions is identifying support requirements, budgeting for those requirements, and upon receipt of the funding, executing the obligation and spend plans for acquiring the logistic support resources necessary to maintain a weapon system at a prescribed level of operational availability. Acquisition cannot occur without funds, funding documents and contracts.

The tool the APML uses to identify the requirements is the LRFS. All ten ILS elements are represented in the LRFS with specific areas or tasks broken down under the appropriate element. The LRFS is required for each milestone and at IOC. It may also be required for presentation at other times during the program. The LRFS is an excellent tool for documenting requirements and funding for the entire life of any system.

In order for the data contained in the LRFS to become part of the budgeting process, approval by the program office, and the NAVAIR comptroller office is required.

**WHY –**

- Budgeting is a necessary process step for identifying requirements and their costs, and to ultimately receive the funding necessary to execute procurement of all support requirements.
- Execution is necessary to provide those allocated funds to the IPTs or activities responsible for acquiring the necessary logistics support resources and services budgeted.

## WHEN –

- **Budgeting:** Schedule driven as illustrated in figure below.

<u>Event</u>	<u>Approximate Timeframe</u>
a. POM Request from the Office of Chief of Naval Operations (OPNAV)	Jan
b. Initial POM Pricing Forwarded to OPNAV	Feb
c. OPNAV Review of POM Estimates and Alternatives	Feb – Apr
d. POM End Game	May
e. Navy Comptroller (NAVCOMPT) Budget Review	Jul
f. Force Mix Alternatives	Aug-Sep
g. Final Budget Review	Sep
h. DON, Navy Budget Submit	Sep
i. OSD/OMB Budget Review	Oct
j. OSD Mark/Navy Reclama	Oct – Nov
k. Force Mix Alternatives	Nov – Dec
l. Final Budget	Dec
m. Congressional Budget	Jan
n. Armed Services Committee Hearings	Feb – Apr
o. Appropriations Committee Hearings	Jun – Aug
p. Budget Approval	Sep – Nov
q. Funding Release	Oct – Dec
r. Prepare Briefings to Defend Logistics Requirements/Budgets	As Required
s. Respond to “What If” Drills	As Required

**Execution:** As soon as possible, following receipt of funds.

**WHERE –** NAVAIR, APML, IPTs

## HOW –

**Budgeting** - The Planning, Programming, and Budgeting System (PPBS) is an overlapping process as shown in Figure D-2-1.

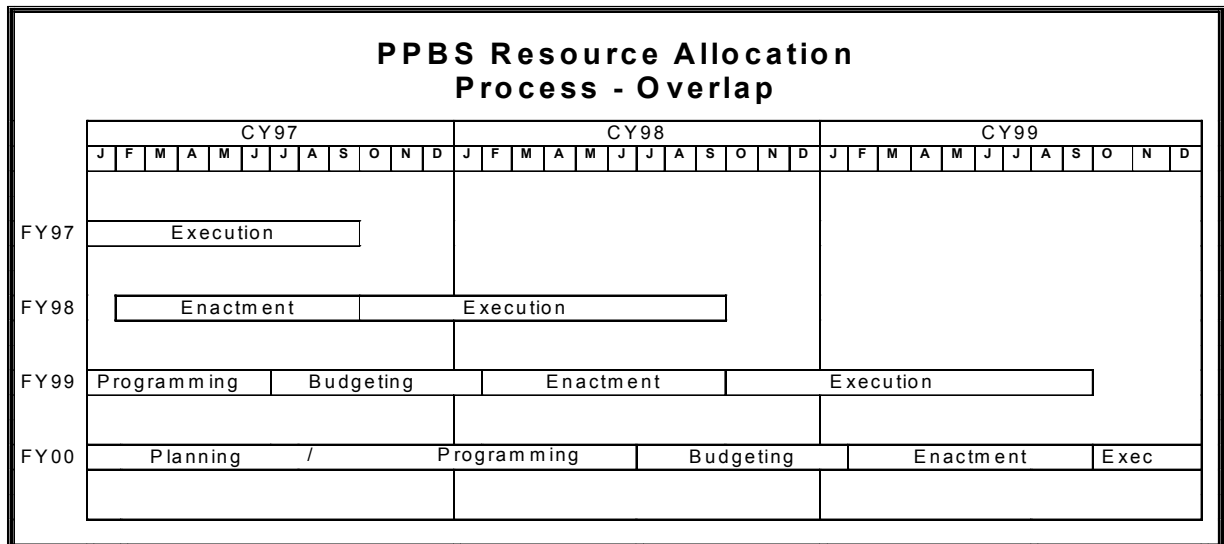


Figure D-2-1

DoD follows a 2 year planning and programming process, with the full process in odd numbered years and an update in even years as depicted in Figure D-2-2 and Figure D-2-3.

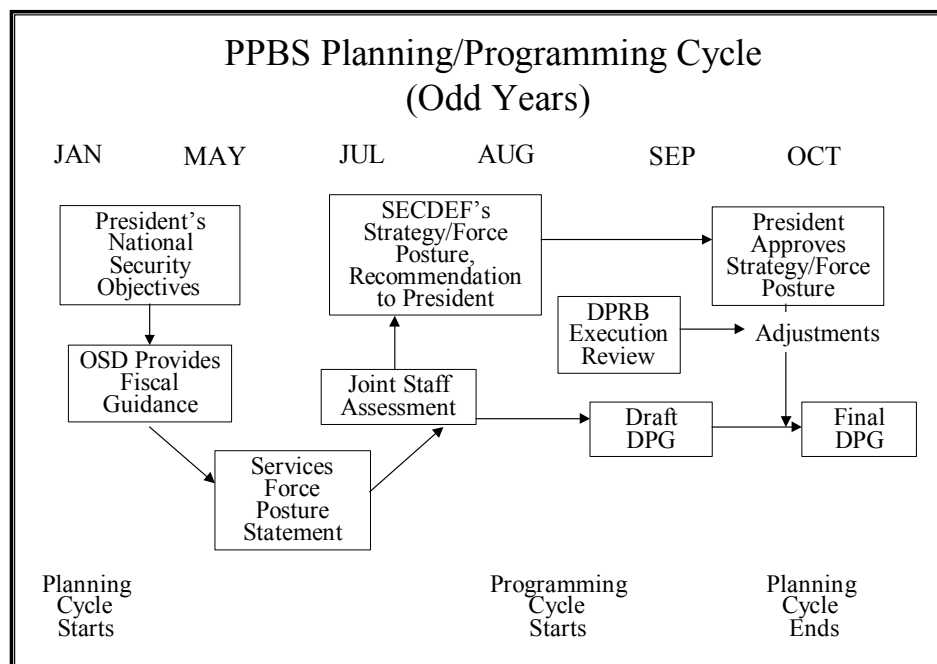


Figure D-2-2

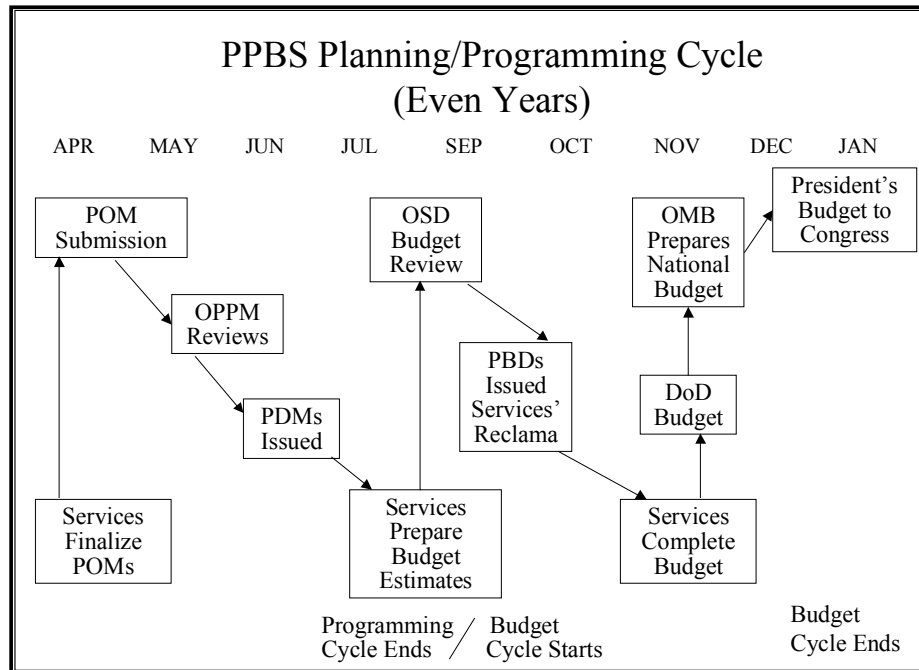


Figure D-2-3

Short-range planning starts in an odd year and includes SECDEF issuing DPG to the services. The DPG provides both fiscal guidance (dollar limits) and narrative guidance as a basis for the programming cycle. The programming phase begins in the latter half of the odd year, based on the draft DPG. The Navy submits its completed POM to OSD in April of the following even year. After review by the Defense Planning Resources Board (DPRB), SECDEF issues PDM which provide the basis for the services preparation of budget estimates.

The Navy POM recommends to SECDEF the total resources, within SECDEF constraints, that are required to meet the Navy's missions. The POM is used not only to submit funding requests, but also to request revisions to previously approved SECDEF programs that have been published in the FYDP.

The LRFS should be used as the basis for a NAVAIR Programs logistics submission to the POM. The APML is responsible for ensuring that the LRFS is prepared and updated regularly and certifying its accuracy. The APML is required to submit the LRFS at Milestone Reviews and IOC. The details of the program depicted in the ALSP should be consistent with the logistics funding requirements depicted in the LRFS. The logistics budget requirements should reflect total funding required for hardware/software contractors, Navy and other Government activities and local contractors. The final logistics budget should be the result of a coordinated effort between the APML and the Program's LEMs. Figure D-2-4 provides an overview of the APML's role in the budgeting process.

Types of Appropriation	Requirements		Execution	
	APML	LEM	APML	LEM
<u>R&amp;D</u>				
• ILS Planning & Mgt	A	-		
• Support of Test Program	A	-		
<u>Development Production</u>				
<u>Requirements</u>				
• Maintenance Planning	A	-	A	-
• Manpower and Personnel	I	A	O	A
• Supply Support	I	A	O	A
• Support Equipment	I	A	O	A
• Technical Data	I	A	O	A
• Training and Training Support	I	A	O	A
• Computer Resource Support	A	-	A	
• Facilities	I	A	O	A
• Packaging, Handling, Storage	I	A	O	A
<u>APN/WPN ETC.</u>				
• ILS Planning & Mgt	A	-		
• Support Equipment	I	A	O	A
• Training/Trainers	I	A	O	A
• Technical Pubs	I	A	O	A
• Spares/Repair Parts	I	A	O	A
• ETS	A	-	A	-
<u>O&amp;M,N</u>				
• CMS	A	-	A	-
• ROR	A	-	A	-
• Training	I	A	O	A
<u>Military Construction (MILCON)</u>				
	I	A	O	
A= Approves				
I = Integrates				
O = Oversight				

Figure D-2-4. The Role of the APML in Budgeting

**Execution:** Financial execution of the logistics budget is more complex and labor intensive than execution of the budgets of other program participants (Class Desk, Aviation System Project Officer (ASPO), PMA, etc) because logistics resources and services are frequently ordered from the Prime Contractor(s) using “Provisional Contract Line Items” under the “Orders Clause” of the contract.

In order to assist with the timely and efficient execution of the budgets the APM directs the development of an Obligation/Spending Plan which reflects budget requirements and approved funding for a given fiscal year. The Obligation/Spending Plan enumerates the



APML's plan for obligation of funds and facilitates development of Statements of Work (SOW) and, Team Work Plans etc., and helps ensure that contractor proposals are ready for processing when funds become available. The Obligation/Spending Plan also permits status tracking of allocated funds from Project Directives (PD) through expenditure of funds. The APML also directs the development of a Financial Control Management System as described in Product Data Reference Guide (PDRG) number 24; contained in ILS Process Specification, AL-082AA-LPS-250. Financial execution involves interface and interaction with the Comptroller (Competency 10.0), Business Financial Managers (Competency 8.0) and Contracts (Competency 2.0). Execution can involve the transfer of funds by many methods including Financial Addendum Sheets, DD Form 448 (Military Interdepartmental Purchase Requests (MIPRS)), NAVCOMPT Form 2275 (WR, PO, In-Progress Review (IPR)), NAVCOMPT Form 2276 (Request for Procurement (RCP)), NAVAIR Form 4470/3 (MILSTRIP) and NAVCOMPT Form 2276A (Work Request (WX), Project Order (PX), Request for Procurement (RX)). Tasks associated with execution may also require that the APML direct the preparation of PIDs in accordance with NAVAIRINST 4200.37 and the drafting of all parts of contracts in accordance with the uniform contract format specified by FAR 15.406.1.

It is always in the APML's best interest to have contract vehicles in place and readily available for rapid obligation of funds.

**APML ROLE** – Logistics Program budget backup documentation should be at the level of detail outlined by the OSD Cost Analysis Improvement Group (CAIG) guidelines. AIR-4.2.5, the O&S and ILS Division within the Cost Department can provide assistance in budget development and retrieval of historical cost information. The cost analysis and documentation behind the budget submissions should be able to support the program through the review chain including Congressional hearings. The level of analysis should be in sufficient detail to be used for decision making when decrements have been imposed by higher authority or to evaluate potential program changes or budget adjustments.

The cost analysis methodology employed by the APML for budget development must facilitate the ability to provide impact statements to the Program Manager during the POM review cycle.

The APML is responsible for providing the LEMs with planning data (such as WSPD information in accordance with NAVAIRINST 13100.11A titled "Preparation of Weapon System Planning Documents" or Program Planning Documents in accordance with NAVAIRINST 5200.14C and associated schedules). The APML requests budgetary inputs and technical backup from the LEMs. The APML also conducts an independent budget analysis for each logistics element and resolves any significant variances between the LEMs estimates and independent budget estimates developed by the APML or his/her staff.

In early program phases the budget is developed from parametric estimates based on planning factors, logistics concepts, proposed operations, locations, site loading,

reliability, maintainability, operational considerations, readiness objectives and level of confidence factors. The effort involves: (a) using historical ILS cost data resident in NAVAIR to establish a database (b) using the database to develop Cost Estimating Relationships (CER) and parametrics; (c) applying the CERs and parametrics to develop an ILS budget consistent with program planning factors and documentation; (d) comparing the draft budget to historical cost data on like/similar and predecessor systems/equipment and analyzing significant differences; (e) preparing budget backup; (f) transferring the data to the LRFS format; and (g) responding to budget calls and price-out “drills”.

Although the APML will probably utilize the talents of AIR-4.2.5 or a local contractor, or a combination of both for early budget development, it is helpful for the APML to have a basic knowledge of the process that is used. The following paragraphs provide an overview of the analysis leading to budget development.

The cost analysis process typically consists of two phases. Phase I involves CER Development and Phase II involves the application of CERs in developing a price-out and documenting the budget requirements.

**Phase I Developing CERs:** In this phase the cost analyst(s) identifies Cost Element Breakdown Structures (CBS), obtains historical databases, restructures the databases as required, conducts database analyses and develops CERs in accordance with the following steps.

**Step 1: Identify ILS Cost Element Breakdown Structure.** The ILS cost elements for each applicable appropriation, shown in Figure D-2-5, serve as the starting point for identifying the CBS for which CERs must be developed.

For example, EMD RDT&E ILS cost elements can be divided into two top level categories:

- Support for the Test Program – involves the material and manpower to provide repair and maintenance of T&E aircraft during EMD
- Development of Production Requirements – involves all of the ILS planning and analysis activity (i.e., supportability analysis, etc) that is performed during EMD to identify the production ILS requirements.

**BA Table for N6 Appropriations**

<b>APPN</b>	<b>BA</b>		<b>APPN</b>	<b>BA</b>
APN	00 Undistributed		MPN	00 Undistributed
APN	01 Combat Aircraft		MPN	01 Pay and Allowances of Officers
APN	02 Airlift Aircraft		MPN	02 Pay and Allowances of Enlisted
APN	03 Trainer Aircraft		MPN	03 Pay and Allowances of Midshipman
APN	04 Other Aircraft		MPN	04 Subsistence of Enlisted Personnel
APN	05 Modification of Aircraft		MPN	05 Permanent Change of Station Travel
APN	06 Aircraft Spares and Repair Parts		MPN	06 Other Military Personnel Costs
APN	07 Aircraft Support Equipment and Facilities			
			RPN	00 Undistributed
WPN	00 Undistributed		RPN	01 Unit and Individual Training
WPN	01 Ballistic Missiles		RPN	02 Other Training and Support
WPN	02 Other Missiles			
WPN	03 Torpedoes and Related Equipment		OMN	00 Undistributed
WPN	04 Other Weapons		OMN	01 Operating Forces
WPN	05 Ammunition		OMN	02 Mobilization
WPN	06 Spares and Repair Parts		OMN	03 Training and Recruiting
			OMN	04 Administration and Servicewide Support
OPN	00 Undistributed			
OPN	01 Ships Support Equipment		OMNR	00 Undistributed
OPN	02 Communications and Electronics Equipment		OMNR	01 Operating Forces
OPN	03 Aviation Support Equipment		OMNR	02 Mobilization
OPN	04 Ordnance Support Equipment		OMNR	03 Training and Recruiting
OPN	05 Civil Engineering Support Equipment		OMNR	04 Administration and Servicewide Support
OPN	06 Supply Support Equipment			
OPN	07 Personnel and Command Support Equipment			
OPN	08 Spares and Repair Parts			
RDTEN	00 Undistributed			
RDTEN	01 Basic Research			
RDTEN	02 Applied Research			
RDTEN	03 Advanced Technology Development			
RDTEN	04 Demonstration and Validation (Dem/Val)			
RDTEN	05 Engineering and Manufacturing Development			
RDTEN	06 RDT Management Support			
RDTEN	07 Operational Systems Development			

**FIGURE D-2-5**

The aforementioned categories can be further subdivided into those shown in Figure D-2-6.

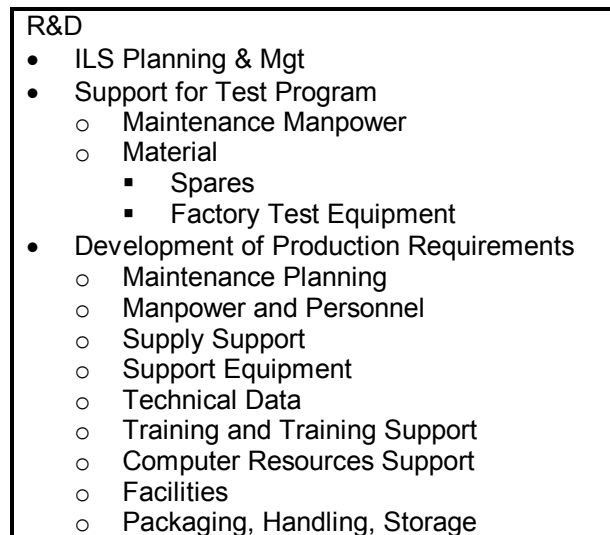


FIGURE D-2-6: SAMPLE R&D ILS COST BREAK DOWN STRUCTURE

The CBS must be developed to at least the level of indenture required by the LRFS.

**Step 2: Obtain Historical ILS Cost Data.** The foundation of the cost estimating discipline is in the availability of historical data. In order to provide a basis for further refinement of estimating methodologies, a list of systems/equipments which typify recent acquisition programs should be selected for analysis. The ALS plans and documentation for the selected programs should be studied to identify the unique properties, characteristics, and ILS considerations which drive logistic support cost. Figure D-2-7 provides a sample list of these characteristics.

**Step 3: Validate Known CERs.** Prior to formulating new CERs, the cost analyst(s) will generally validate the accuracy of known CERs with the assembled database. This effort involves comparing estimates versus actuals for each program. Validated CERs are documented along with backup information. Areas requiring new CERs are then identified.

**Step 4: Develop CERs.** The cost analyst(s) generally will first identify a subset of causal program parameters (independent variables) which can reasonably explain the variances in individual ILS cost elements (dependent variables). These variables are selectively analyzed and historical data correlated. For example, after reviewing several weapon system programs and the actual experience during SD&D to develop TPSs, the Figure D-2-8 scatter diagram was developed.

Physical	Dimensions (Wing Area, Fuselage Length) Weight (AMPR, Empty, Max Gross) Power Requirement WRA/SRA Quantity Material Composition	Fuel Capability Number of Engines Engine Type Engine Dry Weight Modularity of Engine
Performance	Reliability Maintainability Availability Maximum Speed	Consumption Rate Removal Rate Engine Thrust
Cost	Unit Production Cost Development Cost Unit Cost – Major Subsystem	
<u>PROGRAMMATIC</u>		
Operational	Program Type (New Development, Derivative, Modification) Number of AC Procured Number of Squadrons Number of Operational Sites Environmental Utilization Rate	Acquisition Strategy (Sole Source, Competitive) Production Rate Sortie Capability Deck Load Surge Capability CONUS vs Non-CONUS
Support	Number of I-Level Repair Facilities Number of O-Level Repair Facilities Level of BIT SDLM Interval (If Applicable) Maintenance Concept ATE/TPS Requirements SE Planning Support Acquisition Lead Time Interim Contractor Support	Number of Training Centers Length of Pipeline (Commercial, Organic) MSD – Material Support Date NSD – Navy Support Date Deployable Detachments Training Squadrons Remote Sites

FIGURE D-2-7: WEAPON SYSTEM CHARACTERISTICS, INDEPENDENT VARIABLES

The cost analyst(s) may use regression analysis for relationships identified through historical data. The cost analyst(s) will probably also use the standard procedures of stepwise regression, normal residual plots, and statistical significance tests to establish CERs for each ILS work element. The resulting regression equations are then applied to the system/equipment data base and plots of the predicted versus actual ILS costs will be graphed. From these analyses, new CERs can be developed. For example, using the analysis associated with Figure D-2-8 the following CER could be developed for predicting SD&D Test Program Set development cost for a radar system:

$RDT\&E = \sum (\# \text{ of WRAs} \times \# \text{ ENG HRS} \times \text{COST/HR}) + \sum (\# \text{ OF SRA} \times \# \text{ OF ENG HRS} \times \text{COST/HR})$		
COST	WRA	SRA

The CERs and associated statistics should be thoroughly documented with recommendations for how and when the CER may be validly used.

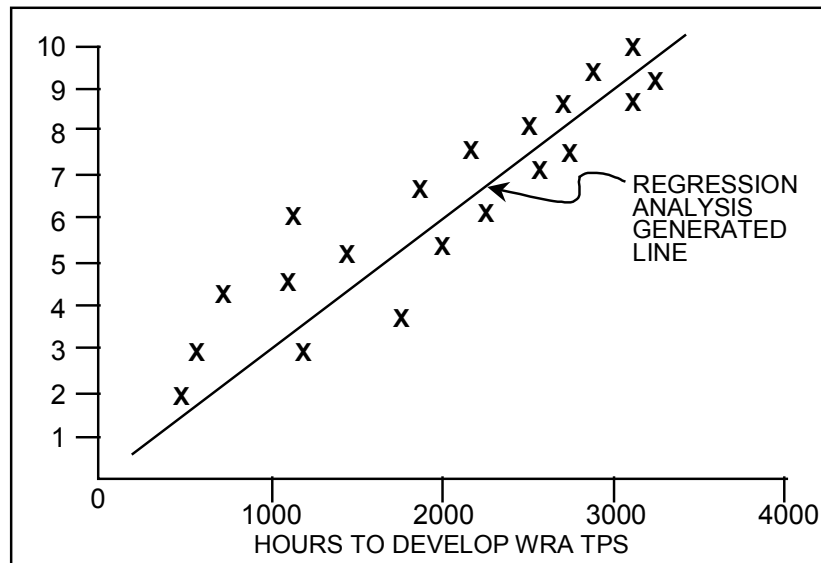


Figure D-2-8. SAMPLE SCATTER DIAGRAM

**Phase II: Developing Budget Inputs.** The cost analyst(s) will use the CERs to develop budget inputs and insert this information into the Budget Back-up Books and document the recommendations in the LRFS database. This is accomplished by performing the following steps:

**Step 1: Review Planning Data:** Planning documents such as the ILS SOW, ALSP, WSPD, SCP, ORD, TEMP are reviewed to establish the scope and phasing of the logistics requirements. Long Lead Time Items will be identified and support dates will be validated. The cost analyst(s) will tailor logistics CERs and define in detail the costs which are included in each element. A list of system characteristics should be developed and where necessary assumptions and high risk areas should be clearly identified.

**Step 2: Estimate the Cost:** For the requirements identified in Step 1 above, required resources and estimated by the CER. The required resources should be allocated over the program phases in accordance with the major ILS and program milestones. The cost analyst(s) should select one or more systems/equipments from the database and perform an element by element comparison of the estimated ILS costs. The objective of this comparison is to explain cost variances and further refine the new system estimates.

**Step 3: Document the Budget Requirements.** The PPBS process requires that cost estimates be submitted in a variety of formats and levels of detail. The cost analyst(s) should assist in responding to budget calls by reformatting budget requirements and LRFS data into standard budget exhibits.

**Step 4: Maintain Backup Documentation.** The APML should ensure that Information Technologies (IT) programs are in place to facilitate the collection, storage, retrieval and

update of logistics requirements and resources data. Budget back-up should be developed and maintained. This capability will enable the rapid and accurate update of data at a low level of indenture and provide visibility into the cost influencing characteristics of particular logistics features. For each budget estimate developed, the APML should ensure the availability of fully documented CERs, assumptions, ground rules, and changes from prior estimates.

**POC** – ILS BFM (if applicable), IPT BFM or PMA BFM

**REFs –**

DoD Directive 7045.14 Titled “The Planning, Programming and Budgeting System”

DoD Instruction 7045.1 Titled “Implementation of the Planning, Programming and Budgeting System”

SECNAVINST 5000.2B Titled “Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs”

NAVCOMPT Manual

NAVAIRINST 7040.16B Titled “Funding of Integrated Logistics Support Costs”

NAVAIRINST 13100.11A Titled “Preparation of Weapon System Planning Documents”

NAVAIRINST 4200.37A Titled “The Procurement Initiation Document Process”

Fiscal Planning and Execution ILS Process Specification; AL-082AA-LPS-220

Logistics Integration/Management ILS Process Specification: AI-082AA-LPS-080

ILS Process Specification: Product Data Reference Guides (PDRG); AL-082AA-LPS-250

PDRG # 24 Titled “Financial Control Management System”

PDRG # 25 Titled “Obligation Plan”

PDRG #31 Titled “Procurement Request”

**LINKS –**

[https://www.nalda.navy.mil/3.6.1/alsp\\_news.html](https://www.nalda.navy.mil/3.6.1/alsp_news.html)

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

[DoDD 7045.14; The Planning, Programming, and Budgeting System \(PPBS\); \(Including Change 1\); 28 July 1990](#)

[DoDI 7045.7; Implementation of the Planning, Programming, and Budgeting System \(PPBS\); Thru Change 1; April 9, 1987](#)

<http://www.dtic.mil/comptroller/fmr/>

Defense Technical Information Center

<https://www.nalda.navy.mil/3.6.1/lrfs2.html>

Logistics Tool Box

[LRFS DM/RS  
ACCESS 97](#)

[LRFS DM/RS  
ACCESS 2000](#)

[User's  
Guide](#)

AIR 3.1E (301) 757-8256

Document Number	Revision	Revision Date	Command	Status	Document Subject
<a href="#">7040.16B</a>		04-21-1988	NAVAIR INSTRUCTIONS	EFFECTIVE	FUNDING OF INTEGRATED LOGISTIC SUPPORT COSTS

Document Number	Revision	Revision Date	Command	Status	Document Subject
<a href="#">4200.37A</a>		07-05-2000	NAVAIR INSTRUCTIONS	EFFECTIVE	THE PROCUREMENT INITIATION DOCUMENT PROCESS



## D-3 - PROGRAMMING, BUDGETING, AND FISCAL ACCOUNTING

**WHO** – APML, BFM, IPTs

**WHAT** –

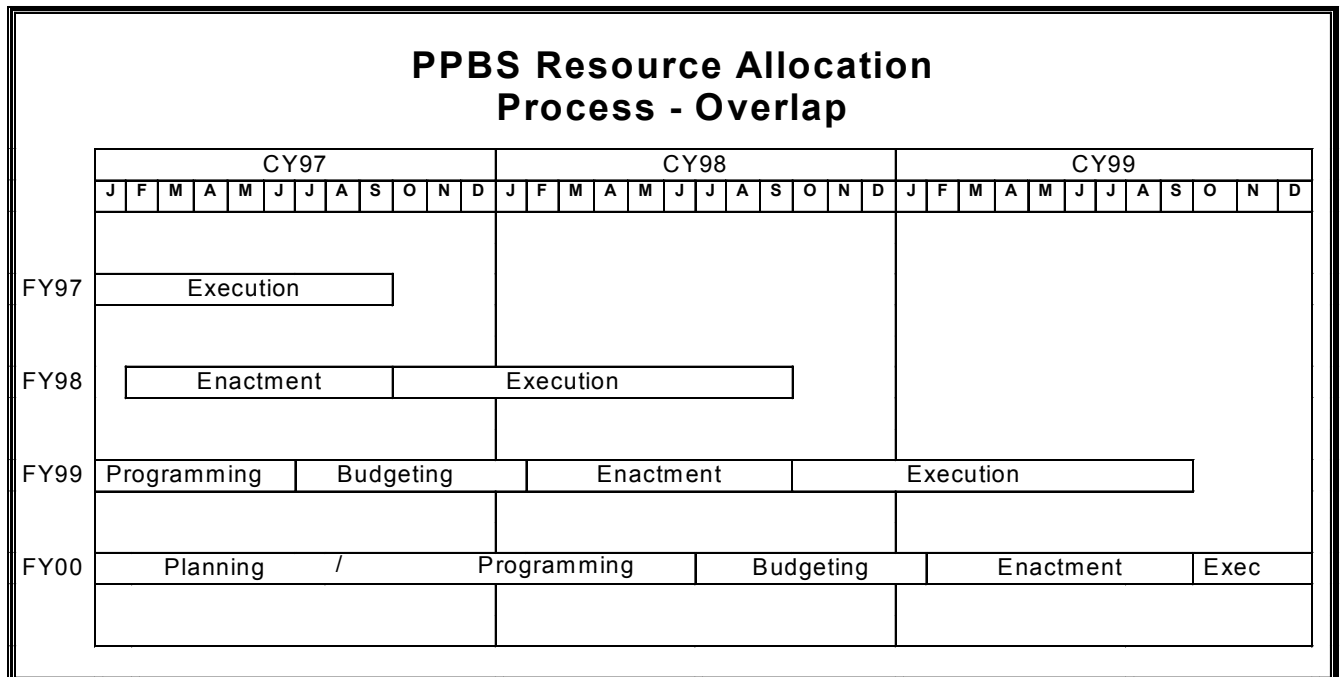
- Developing the Support Program
- Building the Budget and documentation
- Fiscal year allocation, execution and expenditures

**WHY** –

- Ensures the support program requirements are programmed, budgeted and executed within the established DoD acquisition policies

**WHEN** –

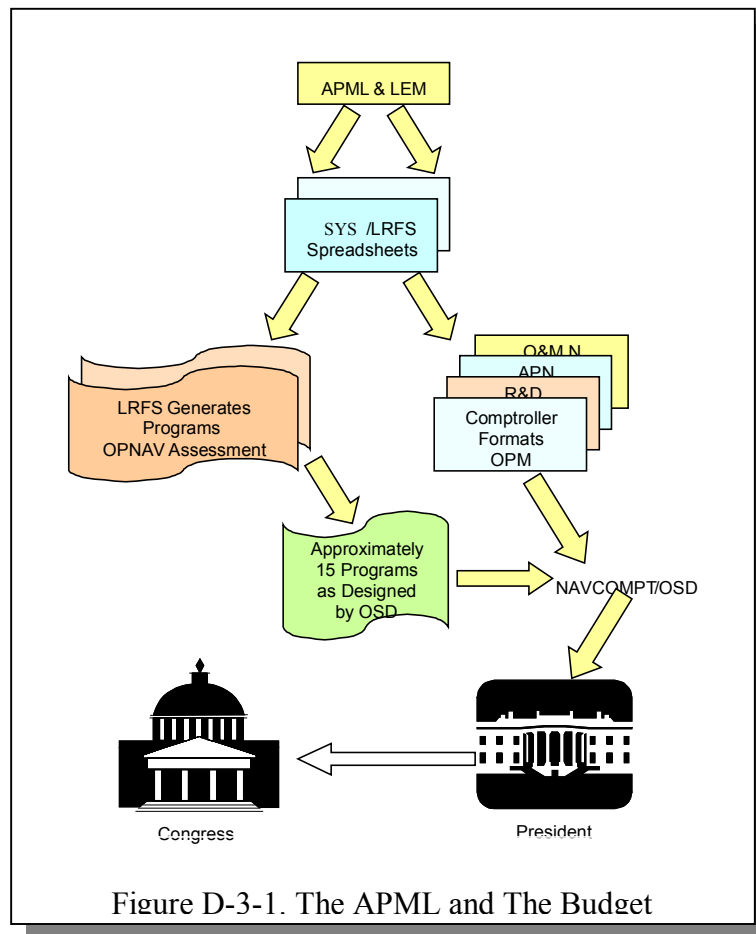
- Throughout the system life cycle
- The Planning, Programming and Budgeting System cycle drives the continuous activities surrounding this requirement
- Fiscal accounting activities illustrated below are driven by the overlapping process and occur frequently throughout the PPBS cycle



**WHERE** – OSD, OPNAV, NAVAIR**HOW** – Developing and maintaining key documentation:

- Budget backup
- Budget Information
- LRFS and backup
- Financial control manual (usually identified within the PMA)

The APML prepares and maintains these documents for the budget process, the internal Navy and DoD budget review process, and the requirement for fiscal accountability. These documents are used to support DoD, SECNAV, and OPNAV requirements to identify product support in the POM. DoD tasks all services to validate product support requirements for new acquisitions and to develop the capability to track associated funding programmed in the POM and budget. The Navy's plan for implementing this tasking uses the LRFS as the tool to arrive at a standard presentation of requirements during the Navy's POM process. Complete LRFSs are required by OPNAV. LRFSs are also required for the IOCSR. This process is shown illustrated in Figure D-3-1.



Budget information should use the same categories as the LRFS. The role of the APML and BFM in programming, budgeting, and fiscal accounting is illustrated in Figure D-3-2. It should be noted that the APML and BFM can fund one year of ETS with APN. For all the years beyond the first year of APN, ETS is funded by O&M,N funds. These O&M,N funds are provided AIR-3.7, who obtains requirements from the Fleet and approves requirements. Upon receipt of the O&MN funds, AIR-3.7 works with the Fleet to develop an execution plan and provides to the Fleet the requisite ETS.

TYPE OF APPROPRIATION	REQUIREMENT		EXECUTION	
	APML	LEM	APML	LEM
R&D				
Support for Test Program	A	-		
Development Production Requirements				
•Maintenance Planning	A	-	A	-
•Manpower and Personnel	I	A	O	A
•Supply Support	I	A	O	A
•Support Equipment	I	A	O	A
•Technical Data	I	A	O	A
•Training and Training Support	I	A	O	A
•Computer Resources Support	A	-	A	
•Facilities	I	A	O	A
•Packaging, Handling, Storage	I	A	O	A
•Design Interface	I	A	O	A
APN				
•Support Equipment	I	A	O	A
•Training and Trainers	I	A	O	A
•Technical Pubs	I	A	O	A
•Product Support Management	A	-	A	-
•Spares and Repair Parts	I	A	O	A
•ETS	A	-	A	-
O&M,N				
•CMS	A	-	A	-
•ROR	A	-	A	-
•Training	I	A	O	A
Military Construction (MILCON)	I	A	O	
A = Approves				
I = Integrates				
O = Oversight				

FIGURE D-3-2. The Role of the APML and BFM in Budgeting and Fiscal Accounting



The level of LEM backup data must be sufficient to ensure that Product Support resources will be procured for maintenance capability and material support. Furthermore, the level of detail must be sufficient to evaluate program changes or budget cuts since the APML is responsible for providing impact statements to the PM during the POM review cycle.

## **BUDGET INFORMATION**

- The APML and BFM are responsible for planning, updating and tracking the execution results of all NAVAIR supplied financial and personnel resources.
- Within the framework of specific budget formats required by the comptroller, the APML and BFM must develop budgets in Budget Information format.
- Since budgets are compiled at a much higher level of indenture than subsystem, a method is required that builds from subsystems to specific budget formats.
- In addition, the method must enable the documentation of justifications and impact statements as well as execution achievement. The building of budgets, their justification, decision procedures, and impact statements against resource shortfalls, execution direction, and achievement measurement is titled budget information.
- Budget Information funding and requirements categories and the respective responsibility codes are presented below:

<b>Category</b>	<b>Responsible Code</b>
Maintenance	AIR-3.2
Technical Data	AIR-3.3
Supply Support (aircraft, missiles, and bombs)	AIR-3.5
Support and Test Equipment	PMA-260
(aircraft, missiles, and bombs)	AIR-3.9
Computer Resources Support	AIR-4.11
Facilities	AIR-8.0
Training and Training Supt.	PMA-205
Product Support Program Management	AIR-3.1
Related Programs	AIR-3.1
Design Interface	AIR-3.2

- Differences between budgets and requirements that arise during reviews should be either resolved or presented to the Budget Information board for resolution.

**Example:** If the Supply Support LEM submits a spares requirement that the PM or APML and BFM believes is too high, the issue should be brought before the Budget Information board. Resolution of issues at this level of review sets the stage for the next level of review, the LRFS. Prior to submission of Budget Information data to OPNAV, the Budget Information Review Committee meets to approve the documents, prioritize deficiencies, and determine any reprogramming possible to overcome resource shortfalls.

- These reviews are held cyclically in:
  - November prior to the POM submission to OPNAV,
  - January prior to the LBAM update, and the President's budget submission to Congress,
  - April prior to the Navy's POM submission to OSD,
  - May prior to the IOC CEB, in June or July prior to NAVCOMPT budget submission, and
  - September prior to the OSD budget submission.

### **Logistics Requirements Funding Summary (LRFS)**

- The APML and BFM are responsible for the preparation of the LRFS. The LRFS is the breakdown of Product Support functions and sub-functions to establish a minimum level of Product Support.
- The breakdown structure assist in requirements determination by the responsible LEMs/LMs and are programmed and budgeted by the NAVAIR claimants and comptrollers.
- The LRFS should not be expanded to an exhaustive list of all the Product Support tasks, analyses, studies, data, and resources that are to be accomplished and acquired. Rather, LMs develop backup data at lower levels of detail during Product Support planning process that permits building to the standard format.
- The purpose of the LRFS is to document FYDP adjustments and the POM process. N-4 reviews the LRFSS submitted, and selects programs for more detailed assessment. Among those selected are:
  - Programs for which OSD requires an assessment to be submitted with the POM; and
  - Programs that exhibit serious funding deficiencies during FYDP years

**Financial Control Management System**

- Tracking execution results of the budget
  - Involves maintaining records of expenditures against funding provided
  - Expenditures of funds provided based on an approved Obligation Plan
  - Tracking execution and expenditures of funding
  - Typical examples of tasks that require the expenditure of funds include:
    - Initiation of new contracts with prime contractors
    - Activation of Orders Clause provisions of existing contracts
    - Funding of TWPs (used to be AIRTASKs and WUAs) relative to field activity support
    - Initiating or continuing contracts with local contractors
  - Monitoring of these procurement activities is necessary to ensure fiscal accountability and responsibility.

**APML ROLE –**

- Establish or engage the process with the BFM to ensure all programming, budgeting and fiscal accounting requirements are identified, planned and executed for the system program
- Ensure LRFS reflects current requirements, funding and maintain backup to justify and defend requirements
- Ensure IPTs execute funding within the approved obligation and spend plans
- Ensure all elements are tracked and monitored to allow adjustments due to program changes and budget adjustments

**POC – BFM**

**REF –**

DoD Directive 7045.14 Titled “The Planning, Programming and Budgeting System”

DoD Instruction 7045.1 Titled “Implementation of the Planning, Programming and Budgeting System”

SECNAVINST 5000.2B Titled “Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs”

**LINKS –**

[DoDD 7045.14; The Planning, Programming, and Budgeting System \(PPBS\); \(Including Change 1\); 28 July 1990](#)

The Planning, Programming, and Budgeting System

[DoDI 7045.7; Implementation of the Planning, Programming, and Budgeting System \(PPBS\); Thru Change 1; April 9, 1987](#)

Implementation of the Planning, Programming, and Budgeting System (PPBS)

<http://www.dtic.mil/comptroller/fmr/>

Department of Defense Financial Management Information Regulation DoD 7000.14-R

<https://www.nalda.navy.mil/3.6.1/lrfs2.html>

Logistics Tool Box

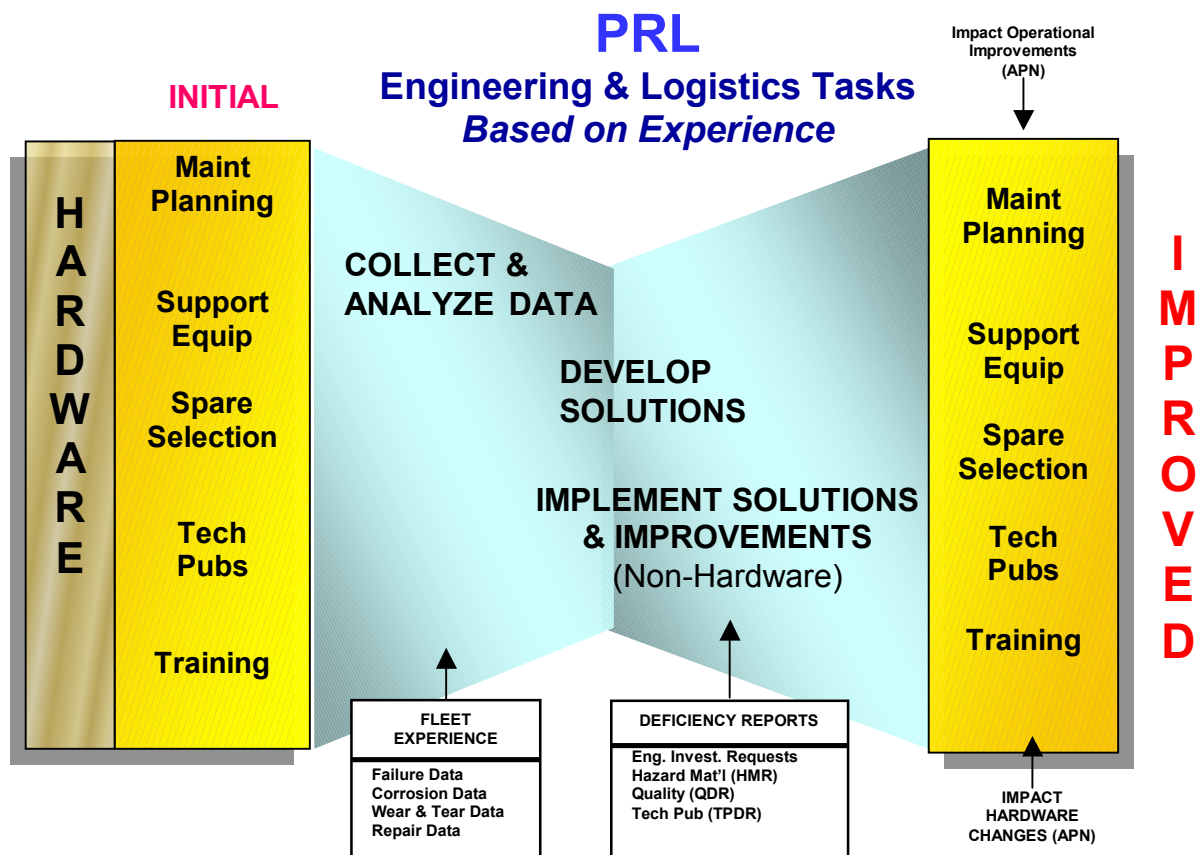


## D-4 - PROGRAM RELATED LOGISTICS (PRL)

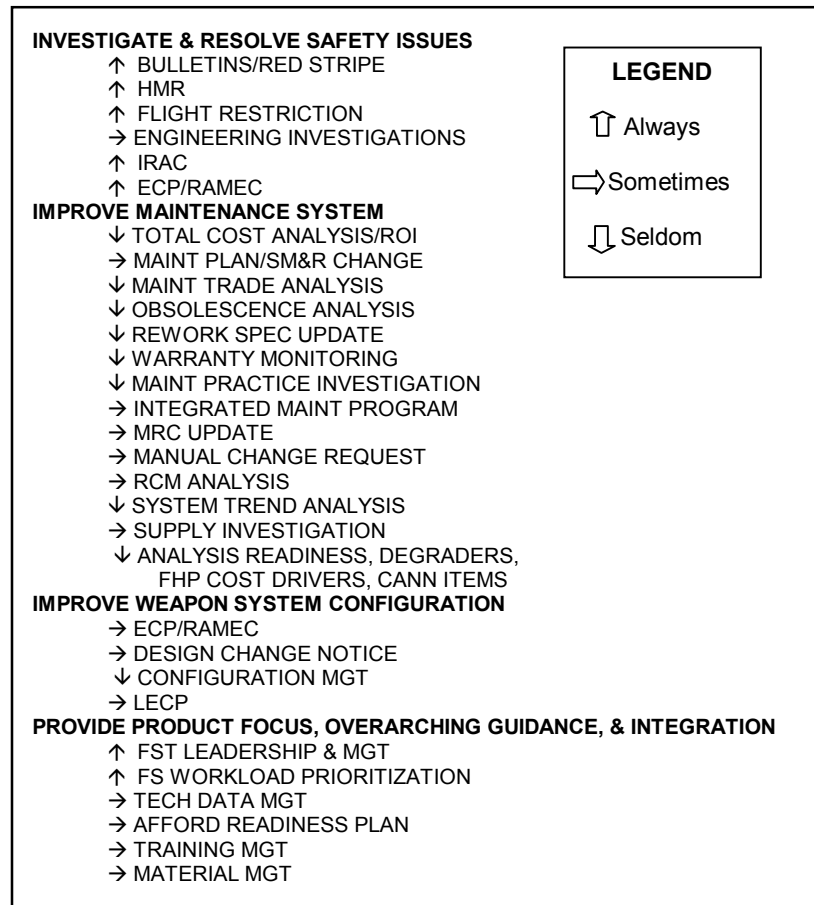
**WHO** – OPNAV, NAVAIR, PEO, PM, APML, APMSE, FST, Fleet

**WHAT** – O&MN Funding for the In-service Maintenance Engineering and Logistics tasks required for system sustainment, including; **Funding (BA-4B4N)** O&MN, BA-4 (Budget Activity (4) Administrative Services Support – 4B (Activity Group (AG)) Logistics Operations and Technical Support- 4N Sub-Activity Group SAG Air Systems Support

- System Sustainment Tasks;



# PRL PRODUCTS



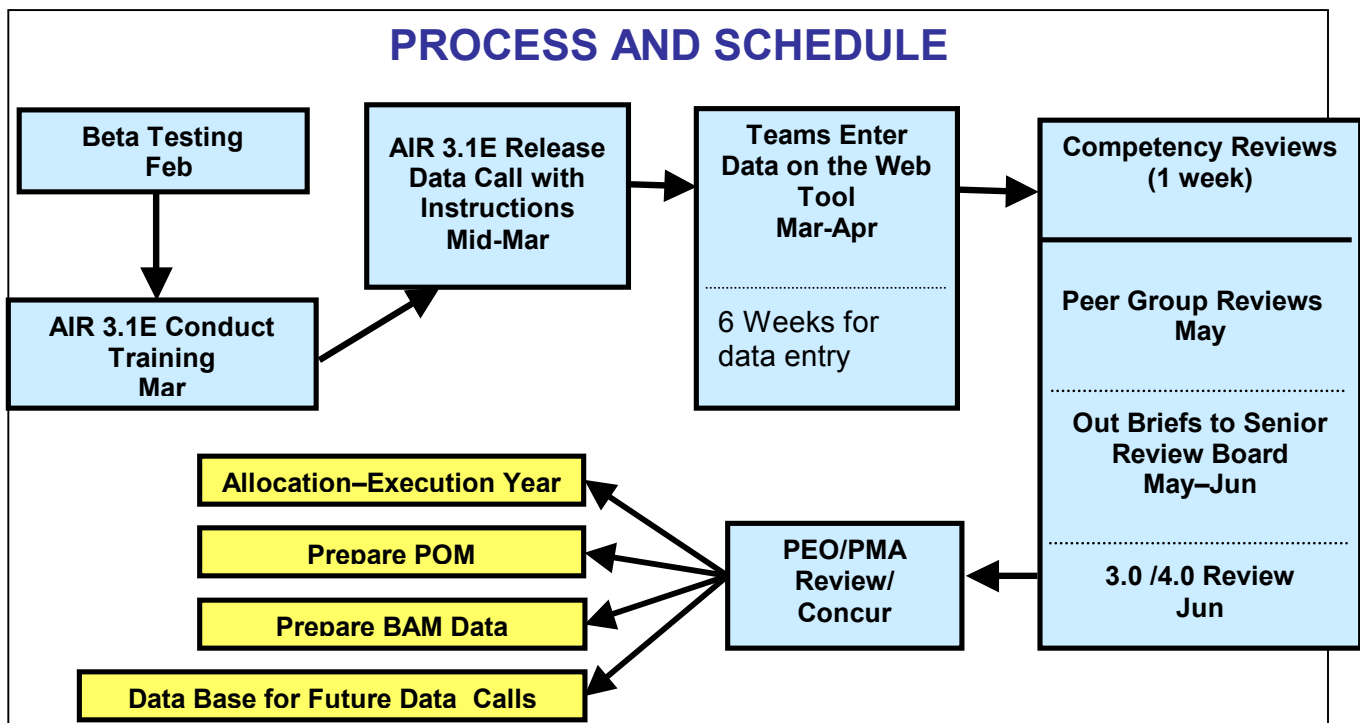
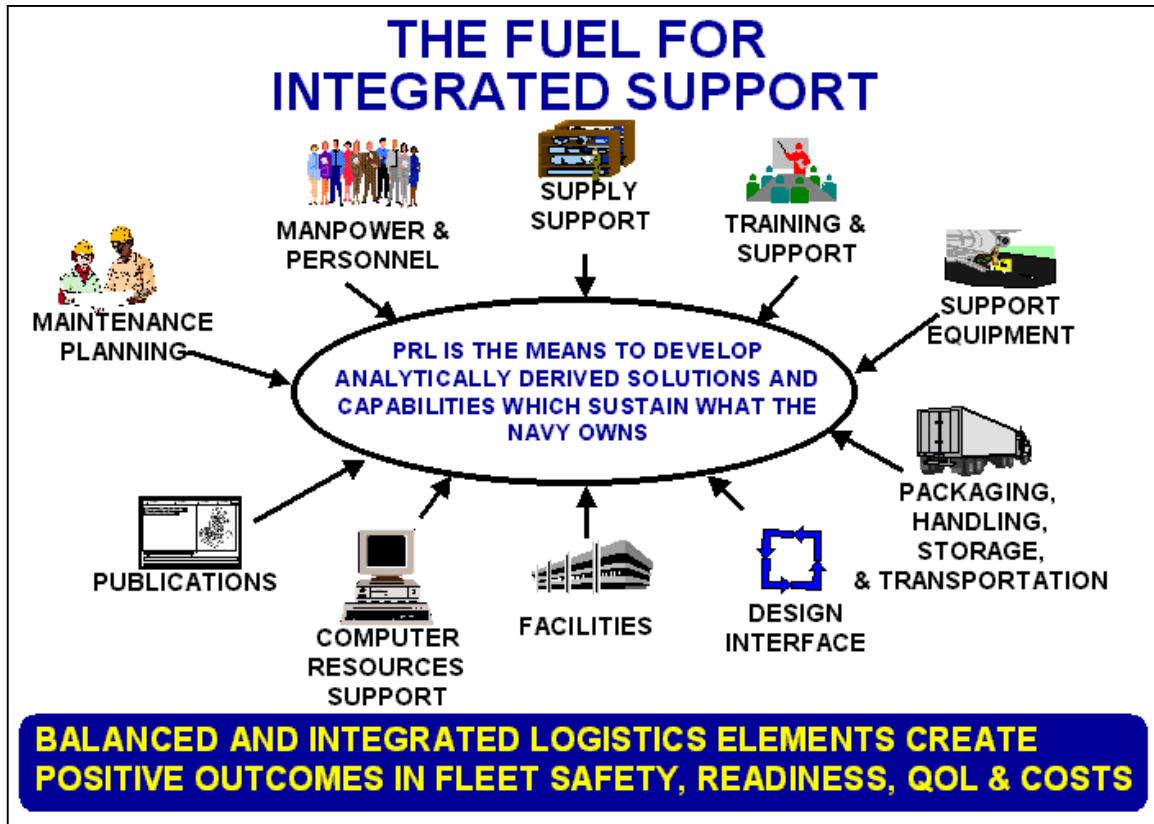
## REFLECTS TEAMS PRIORITIZATION BASED ON HISTORIC FUNDING

### WHY –

- **Improves;**
  - Safety, Readiness and Supportability of entire inventory
  - Quality of Fleet Maintainers
  - Cost of operations to Warfighter

### WHEN –

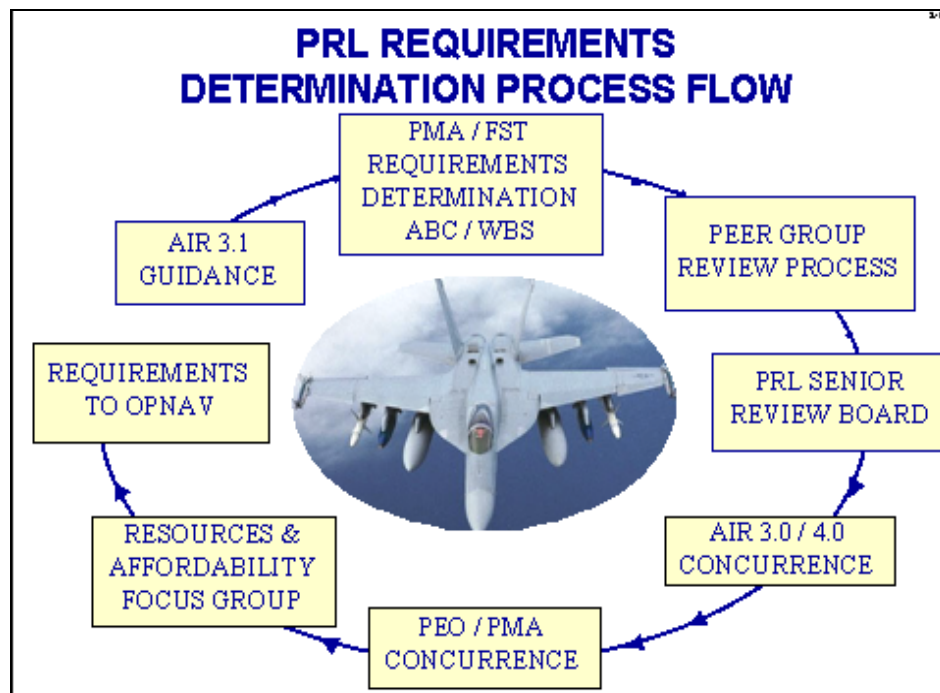
- Initial PRL requirements should be identified Not Later Than (NLT) the POM year prior to the system delivery to the fleet
  - Initiate requirements in the Requirements Determination (ReDet) data call for inclusion into the PRL POM
- Annually thereafter (program review)
  - Peer Group Review (conducted as part of the ReDet process)
  - Senior Board Review (final PRL review following the Peer review approval)



**WHERE** – OPNAV, NAVAIR, PEO, FST, Fleet

**HOW** –

- The PRL call letter initiates the requirements development and review process including;
  - Guidelines to be used
  - When PRL Database will be opened for system requirements entry
  - Peer Group review schedule
  - Any new process changes for the requirements review and approval
- **PRL Process:** Provides an independent assessment of:
  - PRL requirements across the FYDP
  - FYXX PRL requirements
  - Safety of Operations (SOO), Near Term Readiness and Future Readiness
  - SOO (minimum Level of support for safe operations)
  - Understanding of the underlying technical basis including supporting metrics



## PROGRAM RELATED LOGISTICS (PRL)

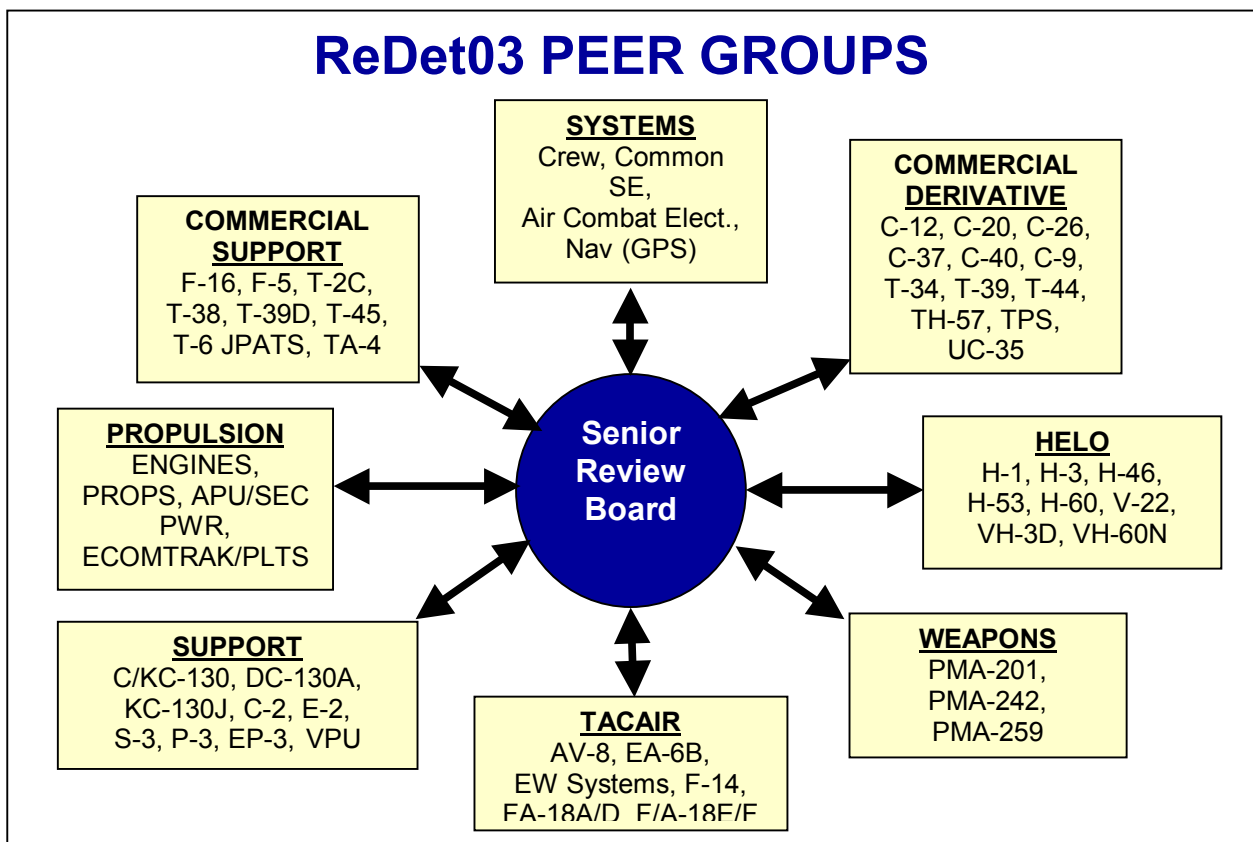
### Major Tasks

- Problem Investigation/resolution
- Maintenance Plan Analysis
- Service Life Adjustments
- Sustainment / Improvement Of Reliability

### Outcomes

- Safety, Readiness And Supportability Of Entire Inventory
- Quality Of Life Of 74,000 Sailors And Marines
- Cost Of Operations To Warfighter

## ReDet03 PEER GROUPS



- **PRL Review Structure:** Aircraft platforms and weapons systems divided into 8 Peer Groups based on similar design/mission characteristics. The ReDet03 Peer groups are described above.
- **PRL Requirements WBS:**
  - By product group (structures, propulsion, etc.)
  - Based on Activity Based Costing (ABC) Work Breakdown Structure (WBS)
  - Team allocated in-service effort, by work years, against the airframe and associated systems (products).
  - Requirements are collected using the three categories of Safety of Operations (SOO), Near Term Readiness (NTR), and Future Readiness (FR).

## REQUIREMENT CATEGORIES

### SAFETY OF OPERATIONS (SOO) (REVISED DEFINITION)

- That Portion of Naval Aviation Readiness Accounts Required To Continue Service Use of a System With Managed Risk.
  - Applies To Aircraft, Aircraft Systems, and All Weapon System Software
  - Includes Minimum Core Support and Facilities To Perform SOO Critical Tasks
- SOO Includes Three Critical Tasks
  - **Monitor And Collect** All Service-Use Information
  - **Triage** All Service Use Data To Prioritize SOO Problems
  - Perform Necessary Work (Engineering, Logistics, Configuration Management) To **Resolve SOO Problems To The Extent Necessary To Mitigate Risk To Below “5” per NAVAIRINST 5100.11**

***Support Levels Below Constitutes Unmanaged Risk Operation of a System Inconsistent With Established Naval Air Systems Command Management Practice and Policy.***

HAZARD CATEGORIZATION		S E V E R I T Y			
		CATASTROPHIC (1)	CRITICAL (2)	MARGINAL (3)	NEGLECTIBLE (4)
F R E Q U E N C Y	FREQUENT (A) = or > 100/100K flt hrs	1	3	7	13
	PROBABLE (B) 10-99/100K flt hrs	2	5	9	16
	OCCASIONAL (C) 1.0-9.9/100K flt hrs	4	6	11	18
	REMOTE (D) 0.1-0.99/100K flt hrs	8	10	14	19
	IMPROBABLE (E) = or < 0.1/100K flt hrs	12	15	17	20
UNACCEPTABLE		CNO / TYCOM / Fleet Acceptance 1-5 HIGH SAFETY RISK		ACCEPTABLE WITH REVIEW	PMA Acceptance 11-17 LOW SAFETY RISK
UNDESIRABLE		PEO / AIR-1.0 Acceptance 6-10 MEDIUM SAFETY RISK		ACCEPTABLE WITHOUT REVIEW	IPT / FST / SSWG Acceptance 18-20 VERY LOW SAFETY RISK
Severity is the worst credible consequence of a hazard in terms of degree of injury, property damage or effect on mission defined below:					
Catastrophic - Class A ( damage > \$1M / fatality / permanent total disability)					
Critical - Class B (\$200K < damage < \$1M / permanent partial disability / hospitalization of 5 or more personnel)					
Marginal - Class C (\$10K < damage < \$200K / injury results in 1 or more lost workdays)					
Negligible - All other injury/damage less than Class C					
Probability of occurrence for discreet events may replace Frequency based upon the chart below:					
Frequent		Probable	Occasional	Remote	Improbable
1/10 <sup>3</sup>		1/10 <sup>4</sup>	1/10 <sup>5</sup>	1/10 <sup>6</sup>	

## NEAR TERM READINESS & MISSION ESSENTIAL OPERATIONS (REVISED DEFINITION)

- That Portion of Naval Aviation Readiness Accounts Required To Reach and Maintain CNO's Readiness Goals. Metrics For This Category Of O&MN Would Include:
  - Ready For Training Rates
  - Sortie Generation
  - Mission-Essential Equipment Readiness

### PRL Elements:

- Lower Risk (HRI 6-20) Safety Problems
- Non-Safety Fleet Responses
- Routine" Els, NAMDRPs, Other Inquiries and Related Efforts
- IMC, RCM, PMA Dets, Remaining Technical Manual Updates
- Analysis of Top FHP Cost Drivers, Readiness Degraders
- Identify Root Causes, Identify Solutions, and Develop Plans/Budgets to Implement Those Solutions

### PRE Elements:

- Lower Risk (HRI 6-20) Safety Problems
- Pri 1 STRs (Prevent The Accomplishment Of An *Operational or Mission* Essential Capability; and/or Jeopardize Safety, Security, or Other Requirements Designated "Critical"
- User Data File Updates for Active Theaters of Operation
- Pri 2 STRs (Adversely Affect the Accomplishment of an *Operational or Mission* Essential Capability and No Work-Around Solution Is Known)

## FUTURE READINESS & FULL MISSION CAPABILITY (REVISED DEFINITION)

- That Portion of Naval Aviation Readiness Accounts Required To Reduce the Cost Of Naval Aviation Readiness or To Provide Full Mission Capability.

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• PRL Elements Pursuant To Readiness Cost Reduction Goals: <ul style="list-style-type: none"> <li>o Perform Trigger Based Asset Management <ul style="list-style-type: none"> <li>▪ Create Metrics for Program Repairables</li> <li>▪ Monitor Those Metrics To Trigger Analysis When Limits Are Exceeded</li> </ul> </li> <li>o Analysis of Remaining FHP Cost Drivers, Readiness Degraders, Canns</li> <li>o Identify Root Causes Of Readiness Costs, Identify Cost Reduction Solutions, and Develop Plans /Budgets to Implement Those Solutions</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• PRE Elements To Implement and Deploy Fleet Release Products That Will Provide Full Mission Capability <ul style="list-style-type: none"> <li>o Pri 3 STRs (Adversely Affect the Accomplishment of an <i>Operational or Mission</i> Essential Capability and a Work-Around Solution Is Known)</li> <li>o Update of User Data Files for Non-Active Theaters of Operation</li> </ul> </li> </ul> |
|---|--|

## Product Groups

Each program enters their requirements in a WBS-ABC format using all of the applicable Product Groups.

		22 Product Groups													
		Avionics (2)	Dynamic Components (3)	Environmental	Flight Controls/Hydraulics	Fuel	Propulsion (4)	Structures	Weapons	Crew Systems	Electrical	Support Equip	ATE	IMC	OOMA Baseline Update
76 Programs	Platforms														
	Systems														
	Weapons														
	Selected Engines														



## Work Breakdown Structure- Activity Based Costing

Each program enters their requirements in the following WBS-ABC formats for each of the applicable Product Groups. An excerpt of the ReDet03 WBS structure is provided below.

		<u>Safety of OPs</u>	<u>Near Term Readiness</u>	<u>Future Readiness</u>	Total
4	In Service Engineering & Logistics Support				
4.1	Plan/Manage ISE/LS Workload/Taskings	0	0	0	0
4.2	Receive/Collect Fleet Requests and System Data				
4.2.1	Receive/Interpret/Evaluate Fleet/User Requests for Emergency Issues/Problems				
4.2.1.1	Receive/Review EI Requests (NAMDRP)	0			0
4.2.1.2	Receive/Review other NAMDRP Requests (HMR, EMR, QDR, TDPR & AR)	0			0
4.2.1.3	Receive/Respond to Fleet/User Inquiries (calls, messages, etc.)	0	0		0
4.2.2	Receive/Collect System Data	0	0		0
4.3	Analyze Fleet Requests and System Data				
4.3.1	Analyze System Data to identify System Problems/Opportunities	0	0	0	0
4.3.2	Determine Root Causes				
4.3.2.1	Perform Routine & Safety EI	0	0		0
4.3.2.2	Perform Mishap EI	0			0
4.3.2.3	Perform Other Root Cause Investigations/Analysis	0	0	0	0
4.3.3	Evaluate & Determine Solutions				
4.3.3.1	Perform RCM Analysis		0		0
4.3.3.2	Perform Cost Analysis (LECP, ROI, Maint Trade-offs, etc.)		0	0	0
4.3.3.3	Perform Technical Analysis/Evaluation	0	0	0	0
4.3.3.4	Perform Obsolescence Trade-off Analysis		0	0	0
4.3.3.7	Generate/Review/Evaluate Beneficial Suggestions (Formal Process)		0		0
4.4	Implement Corrective Actions				
4.4.1	Develop ECP and Technical Directive (TD)				
4.4.1.1	Develop Hardware ECP	0	0	0	0
4.4.1.2	Develop & Issue Formal/Interim/RAMEC TD for H/W Config Changes	0	0	0	0
4.4.1.3	Develop & Issue S/W Maintenance Configuration Changes	0	0	0	0
4.4.1.4	Prepare/Issue Bulletins	0	0		0

### EXCERPT OF ReDet03 COMMON PRODUCT GROUP FORM

## Process Changes

The above process continues to evolve in a constant effort to improve the collection of requirements and the support of the requirements throughout the budget and allocation processes. The command is also working to develop common processes for both Program Related Logistics (PRL) and Program Related Engineering (PRE) budget requirements and funding allocation. In addition, a new, flag-level Air System Support

Allocation Board has been established which is involved in requirements prioritization and allocation.

### **APML ROLE –**

- Coordinate with the AIR-3.1E PRL lead for requirements generation, review and approval process
- Conduct thorough review of all in-service technical support requirements with the BFM, FST site lead
- Establish PRL requirements for system program IAW policy and guidelines
- Execute the PRL process

### **POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			(301) 757-8208

**REF -** NAVAIRINST 40XX.1 (TBD)

### **LINKS –**

[www.nalda.navy.mil/amsr](http://www.nalda.navy.mil/amsr)

[air30.kmspectrum.net](http://air30.kmspectrum.net) (*password required*)

## D-5 LOGISTICS REQUIREMENTS AND FUNDING SUMMARY (LRFS)

**WHO** - PM, APML, BFM, IPTs

**WHAT** - The LRFS identifies resource support requirements and the funds available to meet those requirements. The LRFS summary displays requirements versus funding for all ALS elements and related disciplines by fiscal year and appropriation, and is traceable to the ALS milestone schedule, acquisition logistic support plan (ALSP) and the Program's POM submittals.

- LRFS General Format: (consist of 10 parts)
  - Cover and Backup Page(s)
  - Introductory Narrative/ Narrative Section
  - System Support Summary Funding Profile (SSSFP)
  - SSSFP Total-by logistic support element
  - SSSFP Total-by appropriation & all logistics support elements
  - SSSFP Total-by appropriation(s)
  - Logistics Element Pages
  - Manpower Summary
  - Supportability Requirements Definition and Funding Deficiency Impact Statement

**WHY** - APML will maintain a current LRFS with supporting information consistent with approved program schedule and funding. The PM ensures that the LRFS is developed, and prepares the POM input to ensure budgeting for the funding identified in the LRFS.

**WHEN** - Beginning with initial logistics costs identification, Milestone A.

**WHERE** - NAVAIR, PM, IPT

**HOW** - Financial planning, documents, and budget exhibits should be made consistent with this summary information.

- a. LRFS Profiles. The support funding profile should be consistent with the P-6 exhibit of the POM. Logistics requirements must be based upon program phasing and baseline agreements. Changes in phasing and baselines require analysis and possible revision to the LRFS profiles.
- b. Profile Column Headings
  - (1) Specific definitions for columns among these profiles are defined in the Defense Acquisition Deskbook (DON Section), Appendix.
  - (2) Appropriation (APPN). Identify the appropriation containing the programmed funding for each logistics element. For procurement appropriations (e.g.,

Aircraft Procurement, Navy (APN), Weapons Procurement, Navy (WPN), Other Procurement, Navy (OPN), Shipbuilding and Conversion, Navy (SCN)) also indicate the budget activity number (e.g., aviation spares is APN-6).

- (3) The remaining columns are for the Prior/Current/Budget and out years of the FYDP. These columns are used to display the logistics support requirements (REQ'D or R) and the funded portion (FUND or F) of these requirements. The Prior Years Actual column will display funding only. Requirements and funding should be displayed for all fiscal years.

- c. Budget Estimates. Describe how ALS budget estimates were derived and discuss the schedule for obtaining adequate funds at the time when they are required. Summarize the budget and funding requirements. Identify the logistics requirements in the Logistics Requirements Funding Summary (LRFS) to meet the AL program milestones. Document the logistics funding requirements in the LRFS that will ensure consistent budget data displayed in the formal program budget exhibits.

- (1) The "Required" ("REQ'D" or "R") column in the LRFS contains the cost estimates for logistics support, by element, based on current program documentation.
- (2) Where an Acquisition Logistics Support (ALS) element does not apply to a particular program, an explanatory narrative must be provided.
- (3) When an ALS element is funded in more than one budget line and/or appropriation, each budget line or appropriation should be listed separately.
- (4) The LRFS will identify estimates for all support costs, including those that are the responsibility of the program manager as well as those that are not. A breakdown of funding requirements at the sub-element level, with supporting rationale, will be maintained current by the APML and be consistent with the ALSP. Do not include cost estimates for required subsystems for which separate LRFSS have been prepared; the cover sheet of the LRFS should identify such subsystems by program title and the LRFS approval date.
- (5) The resource requirements displayed in the LRFS should be expressed in then-year (escalated) dollars per approved DON Comptroller indices. Resources should be displayed in thousands of dollars.

- d. Description of LRFS Logistics Elements

- (1) ALS PROGRAM MANAGEMENT. This element covers all management activities for the ILS program, including supportability analysis costs not covered under deliverables for other elements. Specific sub-elements to cover include management, plans (ALSP, TEMP, SAMP, SEP), CSS and Government Salaries, Travel, and other.

- (2) COMPUTER RESOURCES SUPPORT. This element identifies the resources needed to support the Computer Resources for the system, including requirements for development as well as support. Software configuration management is included in “Related Programs” under the “Configuration Management” sub-element. Software Support Activity (SSA) training should be displayed under “Training & Training Support.”
- (3) CONFIGURATION MANAGEMENT. This element identifies the requirements and funding for development and execution of a complete configuration management program, (includes both contractor and government efforts).
- (4) DESIGN INTERFACE. Design Interface is the relationship between program and logistics support requirements. Supportability considerations should be included in all program trade-off (cost, schedule, and performance) studies, including modifications and updates to the system.
- (5) FACILITIES. This element includes all Military Construction, Navy (MCN), operations and maintenance, Navy (OM&N) minor construction, public works and utilities requirements. Specific sub-elements to be considered are MCN planning and design, military construction; operations and maintenance, Navy (O&MN); MCN unspecified minor construction; public works support; utilities; facilities analysis and plans.
- (6) MAINTENANCE. Sub-elements include both contractor and government maintenance requirements. Investment costs for maintenance capability should not duplicate requirements and funding identified in other sections (e.g., support equipment). Primary plant equipment that is unique to a depot or intermediate repair facility should be included as investment cost in this section. Repair costs should not duplicate costs included in other categories (spares, engineering services, etc.) but should reflect funding programmed specifically for a repair effort where labor costs exceed the costs for parts (e.g., repair of repairable). Software support is included under “Computer Resources Support “ rather than “Maintenance.”
- (7) MANPOWER AND PERSONNEL. This element entails for the POM years, the total manpower and personnel requirements with the aptitude, and experience required and available to operate and maintain the system to achieve optimal total system performance for numbers of personnel (Officers/Enlisted/ Civilian) and dollar resource requirements and funding. The Military Personnel, Navy (MP,N) appropriation funds military personnel pay and the O&M,N funds civilian personnel pay.
- (8) PACKAGING, HANDLING, STORAGE & TRANSPORTATION (PHS&T). This element identifies the resources, processes, procedures, design consideration and methods to ensure that all system, equipment, and

support items are preserved, packaged, handled, and transported properly including: environmental considerations and equipment preservation requirements for short and long term storage, and transportability.

- (9) SUPPORT EQUIPMENT. Support Equipment (SE) requirements should be projected for all levels of maintenance (O, I, and D), training sites, test sites, and other field activities. This includes common and peculiar support equipment test program sets, tools, jigs, fixtures, calibration standards, SE support acquisition, and analysis, studies, plans and data. SE that is unique to Software Support Activities (SSAs) should be included under the “Computer Resources Support” element. Items that are also used for other than SSA applications should appear here.
- (10) SUPPLY SUPPORT. This section delineates Spare and Repair Parts (S&RP) according to the function for which the requirement should be identified and acquired. Submissions should include requirements for spares for training hardware and for peculiar support equipment, if applicable. If these are included, they can be shown as separate breakouts by using unique claimant codes. Ensure that requirements stated agree with those submitted via the Program Support Data sheet process, if applicable. For aviation programs include outfitting buy-out requirements.
- (11) TECHNICAL DATA. This element includes requirements for the development, production, distribution, and updating of various types of technical data and technical manuals and costs associated with implementation of the Computer-Aided Acquisition and Logistics Support (CALS) initiatives associated with the system or program under development; and support of associated management, review, and source data requirements.
- (12) TRAINING AND TRAINING SUPPORT. This element includes all training course requirements from development to instructor services including (formal instructional, on-the-job, embedded, and simulation training). Training equipment, aids, SSA training requirements, and other support is also included. Specific sub-elements to be included in training course development, initial or contractor training services, technical training equipment, training devices/aides, analysis and studies, training equipment installation, engineering and technical services and other. These funding requirements should coincide with the tasking requirements reflected in the Training Plan Program Methodology (TRPPM), formerly HARDMAN analysis.
- (13) RELATED PROGRAMS. This element includes any other support includes any other support related activities, program related logistics, Standardization, Interchangeability & Interoperability, Hazardous Materials Classification and Management (HMC&M), contractor or government

laboratories, and field activities that require DON resources in any milestone phase. Do not include items funded by fleet O&M,N accounts.

- e. LRFS Appropriations Summary. This is a composite of the logistics requirements by appropriation.
  - (1) Logistics Requirements -- Column R. Summarize the total dollar requirements for each appropriation for support elements 1 through 9.
  - (2) Logistics Funding -- Column F. Add the total funds currently programmed in the FYDP by appropriation, line item, and year, which are available to satisfy the logistics requirements. This should be the total of all LRFS funding shown by year.
  - (3) Total Program -- Column TP. This column should reflect the total program requirements (hardware and logistics) requested at the time of completing the form and based upon currently approved procurement quantities of hardware, schedule, and known costs.
- f. Impact of Funding Deficiencies Statement. Provide statements for each funding deficiency shown on the LRFS at the sub-element level of detail. Explain the shortfall's impact on the program. Explain the shortfall's impact on readiness and identify the proposed work-around in the event that these shortfalls are not resolved.
- g. ALS Milestone Chart. Provide a current milestone chart for the ALS program.

### **Logistics Requirements Funding Summary (Format)**

PROGRAM TITLE:		RESOURCE SPONSOR:
ORGANIZATION CODE:	PM CODE:	
PROGRAM MANAGER:	DSN:	
PHONE:		ALSP DATE:
INITIAL LRFS DEVELOPMENT DATE:		
REVISED LRFS DATES:		SUBMISSION DATE:
PURPOSE OF SUBMISSION:		

Subsystems and components in this system for which the logistics support funding is the responsibility of another project office and not included in this LRFS:

REQUIREMENTS CONCURRENCE (Logistics Mgr)	(Signature)	Program Title	Appr. Date
FUNDING CONCURRENCE (Business Financial Mgr)	(Signature)		(Date)
APPROVAL (PROGRAM MANAGER)	(Signature)		(Date)

## Logistics Requirements Funding Summary Introduction

### PROGRAM SUMMARY:

	<u>Prior</u>	<u>CFY</u>	<u>BFY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>TO</u>	<u>COMPLETE</u>
--	--------------	------------	------------	-----------	-----------	-----------	-----------	-----------	-----------	-----------------

### SYSTEM PROCUREMENT BY FISCAL YEAR:

### SYSTEM DELIVERIES BY FISCAL YEAR:

### New Production:

### Retrofit:

### SITE/UNIT ACTIVATION SCHEDULE:

### TRANSITION FROM CONTRACTOR TO ORGANIC SUPPORT:

Maintenance Support Date:

Material Support Date (MSD):

Software Support Date (SSD):

### PROGRAM PEACETIME/WARTIME SUPPORT PERFORMANCE THRESHOLDS:

Operational Availability (A<sub>o</sub>)

Mean Time To Repair (MTTR):

Mission Capable (MC):

Mean Time Between Failures (MTBF):

Full Mission Capable (FMC):

Other thresholds from Acquisition Program Baseline:



**LRFS**
**System Support Summary Funding Profile (Elements)**
**PROGRAM TITLE:  
SUPPORT ELEMENT**

			<u>PY</u>	<u>CFY</u>	<u>BFY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>TOTALS</u>
1.	ALS Program Management	Required Funded										
2.	Computer Resources Support	Required Funded										
3.	Configuration Management	Required Funded										
4.	Design Interface	Required Funded										
5.	Facilities	Required Funded										
6.	Maintenance	Required Funded										
7.	Manpower and Personnel	Required Funded										
8.	Packaging, Handling, Storage and Transportation	Required Funded										
9.	Support Equipment	Required Funded										
10.	Supply Support	Required Funded										
11.	Technical Data	Required Funded										
12.	Training and Training Support	Required Funded										
13.	Related Programs	Required Funded										
		Required										
	Total:	% Funded										
		Delta:										

**LRFS**  
**System Support Summary Funding Profile (Appropriations)**

**(FYDP \$000)**

DATE:

PROGRAM TITLE:

<u>APPROPRIATION</u>	CURRENT YEAR			BUDGET YEAR			FY	
	<u>R</u>	<u>F</u>	<u>TOTAL PROG REQ'D</u>	<u>R</u>	<u>F</u>	<u>TOTAL PROG REQ'D</u>	<u>R</u>	<u>F</u>
SCN-								
WPN-								
APN-								
OPN-								
PMC-								
RDT&E-								
MCN-								
O&M, N-								
O&M, MC-								
O&M, NR-								
WCF								

Note: (1) Resources are to be displayed in thousands of dollars (\$K dollars).  
(2) Not all programs will have all appropriations.

**LRFS**  
**INDIVIDUAL ELEMENT SHEETS**  
(FYDP \$000)

**System:**
**Date:**

Element		Prior	YR	Current	YR	Budget	YR	Prgm	YR	FY	05
	Appro.	R	F	R	F	R	F	R	F	R	F
Maintenance Total		0	0	100	100	100	0	100	0	100	0
108 Analysis/Studies Plans Data	RDTE	0	0	100	100	100	0	100	0	100	0

**LRFS**  
**INDIVIDUAL ELEMENT SHEETS (Cont'd)**  
(FYDP \$000)

Element	Appro.	FY	06	FY	07	FY	08	FY	09	FY	10
		R	F	R	F	R	F	R	F	R	F
Maintenance Total		0	0	100	100	100	0	100	0	100	0
108 Analysis/Studies Plans Data	RDTE	0	0	100	100	100	0	100	0	100	0

## SUPPORTABILITY REQUIREMENTS DEFINITION AND FUNDING DEFICIENCY IMPACT STATEMENT

<b>Detailed Requirement</b>	<b>LRFS Element</b>	<b>LRFS Sub-Element</b>
Logistics Support	ALS Program Management	Analysis/Studies, Plans, Data

.....

### Logistics Manager

<b>Name:</b>	<b>Code:</b>	<b>Phone:</b>	<b>DSN:</b>
Mr. Not Real	Air 3.1.1.1P3	(301) 757-0000	757-0000

.....

<b>Appropriation:</b> RDT&E	<b>Dollar Type:</b> C	<b>Rec/Non-Recurring:</b> R	<b>Allocated:</b> NO
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<b>OFP #</b>	<b>HONA:</b>	<b>Hardware:</b> N	<b>In-house:</b> Y	<b>Maint. Level:</b>
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<b>WBS/CLIN:</b> 1.5.7	<b>Contractor:</b>	<b>Activity:</b> NAWC Pax
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<b>IPT:</b> Support	<b>LEM/SME:</b> Rebbi J. Carlitzen	<b>3.0 comp. Lead:</b> Daniel RealMcCoy
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.....

	Prior Year	Current Year	Budget Year	Prgm Year	FY 05	FY 06	FY0 7	FY 08	FY 09	FY 10
Required:	0	125	137	137	150	150	150	150	160	160
Funded:	0	80	128	137	0	0	0	0	0	0
Delta:	0	35	9	0	150	150	150	150	160	160

### NOTES

**ESTIMATING METHODOLOGY:** Estimate is based on one man-year of effort using current labor rates for NAWC Pax.

**REQUIREMENT JUSTIFICATION:** Support is needed to assist with additional program review requirements from ASN/RDA.

**DEFICIENCY IMPACT:** Not all logistics plans, and analysis will be conducted in time to meet critical milestones.

**WORKAROUND:** Increase in APML hours/workload, schedule slippage, and possible failure to meet milestone reviews.

## LRFS MANPOWER SUMMARY

Date:

		Prog ID	CC/RS	FY 05 R	FY 05 F	FY 06 R	FY 06 F	FY 07 R	FY 07 F	FY 08 R	FY 08 F	FY 09 R	FY 09 F	FY 10 R	FY 10 F
<b>PERSONNEL REQUIREMENTS</b>															
<b>FLEET BILLETS</b>															
Operational															
Military (officer/Enlisted)	MPN			13	0	13	10	22	15	13	0	25	0	40	0
Civilian	O&MN			10	0	12	0	15	0	18	0	25	0	40	0
<b>MAINTENANCE</b>															
Military (Officer/Enlisted)	MPN			13	13	13	10	22	15	13	0	25	0	30	0
Civilian	O&MN			10	0	2	0	15	0	18	0	20	0	20	0
<b>SUPPORT</b>															
Military (officer/Enlisted)	MPN														
Civilian	O&MN														
<b>FLEET SUPPORT BILLETS</b>															
Military (officer/Enlisted)	MPN														
Civilian	O&MN														
<b>STAFF BILLETS</b>															
(Instructor/Support)															
Military (officer/Enlisted)	MPN			23	0	33	20	32	25	33	0	25	0	30	0
Civilian	O&MN			10	0	12	0	15	0	18	0	25	0	30	0
<b>CHARGEABLE STUDENT BILLETS</b>															
Military (Officer/Enlisted)	MPN														
Civilian	O&MN														
<b>Total</b>	Required:			49	13	59	40	56	55	59	0	75	0	100	0
	Funded:			30	0	26	0	45	0	54	0	50	0	90	0
	Delta:			19	13	33	40	11	55	5	0	25	0	10	0
<ul style="list-style-type: none"> <li>• R = Required</li> <li>• F = Filled</li> </ul>															

**APML ROLE -**

- Directly responsible for determining the funding needed in all program and appropriation categories to buy logistics material and services over the entire life cycle of the supported material system.
- Prepare a logistics funding requirement document that defines and supports these requirements.
- Interface and use the specialized expertise of the individual logistics element managers who are assigned to support the program.
- Develop funding requirement estimates for all activities and sub-activities of the entire ALS program.
- For each activity shown in the logistics milestone charts there should be a corresponding cost entry in the funding plan.
- Ensure resource requirements displayed in the LRFS document covers the prior-year actuals, FYDP for the current year, budget year, program year and six out-years.
- Requirements and funding shall be expressed in then-year (escalated) dollars per approved indices of inflation.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	LRFS Program Manager	NAVAIR HQ	(301) 757-8316

**REF -** DoD Deskbook DON Discretionary Requirements (DON Section), enclosure (7), appendix XI.

**LINKS -**

[Department of the Navy \(DON\) Section \(Discretionary\) of Defense Acquisition Deskbook \(Reference Library\) February 12, 1997](#)

Annex B Logistics Requirements and Funding Summary (LRFS) (Discretionary)

<https://www.nalda.navy.mil/3.6.1/lrfs2.html>

Logistics Tool Box

[LRFS DM/RS ACCESS 97](#)

[LRFS DM/RS ACCESS 2000](#)

[User's Guide](#)

<https://www.nalda.navy.mil/3.6.1/alsp0602.doc>

Logistics Tool Box

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box

## D-6 - COST ADJUSTMENT AND VISIBILITY TRACKING SYSTEM (CAVTS)

**WHO –** OPNAV (N78CF), PEO, PMA, APML, APMSE, IPTs

**WHAT –** Controlled access web-tool developed and published to improve communication of the Flight Hour Program (FHP) budget and execution data across the aviation enterprise

**Flying Hour Program:** (Subset of O&S Costs)

- Fuel, Repair of Components (AVDLR), Consumables and Contracts
- CNET Claimancy (Training) Aircraft not included

**WHY –**

- Measures The Product To The Plan
- Establishes the process for key stakeholders to provide input in the FHP budgeting process
- CAVTS documentation is required for NWCF obligations authority consideration

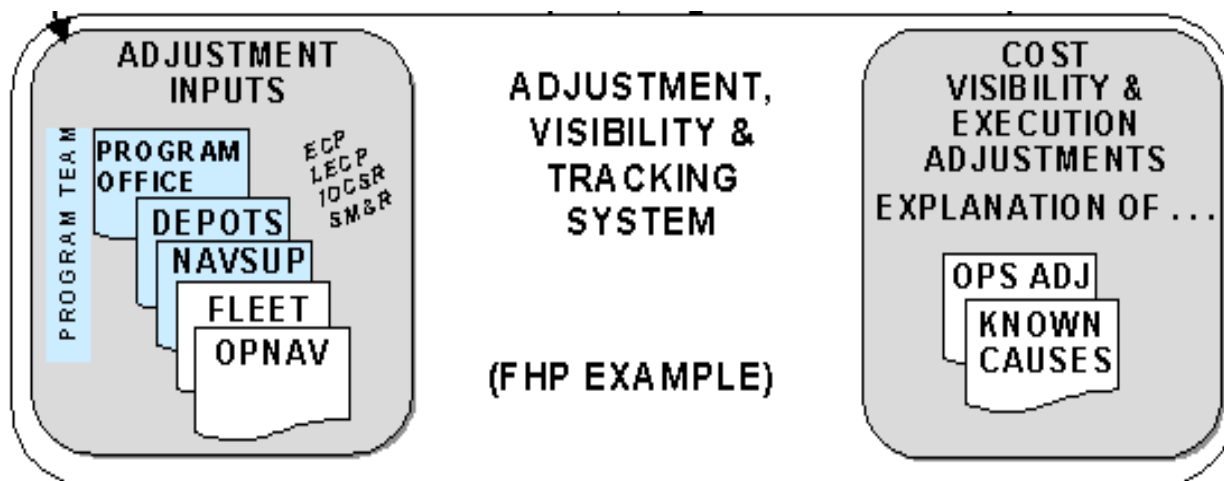
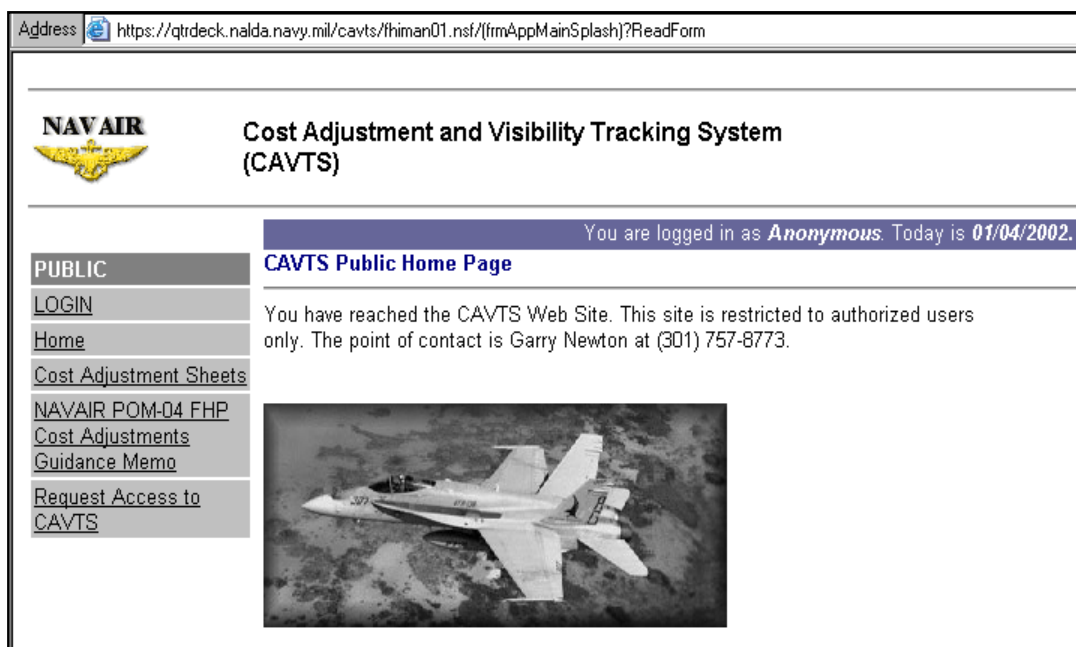
**WHEN –**

- Prior to system reaching Material Support Date (MSD)
- ECPs and life limit changes
- Maintenance plan/process changes
- Warranty expiration or initiation
- PBL contract implementation
- Programs pre-designed as “CLS programs for life”
- Other anticipated demand change in AVDLR or maintenance consumables

**WHERE –** NAVAIR, PEO, NAVICP, OPNAV, Fleet

**HOW –**

- Interface with the 4.2 CAVTS POC
- Work with your NAVICP representatives to identify & input budget issue sheets (cost adjustments) in CAVTSCAVTS is available to provide T/M/S FHP historical trends, outyear budget, and execution year performance via the web-toolInitiate CAVTS adjustment sheets via the web-tool (the vehicle to relay this impact to N78CF FHP Resource Sponsor)



#### **COST ADJUSTMENT SHEETS WILL:**

- Provide insight on issues which will drive outyear FHP cost
- Explain variances from budget in execution year



## APML ROLE –

- Initiate contact with 4.2 CAVTS POC for coordination and requirements generation
- Initiate web-tool interface
- Interface with program IPTs for required information to populate required CAVTS data sheets
- Initiate CAVTS data sheets per 4.2 schedule and FHP data call
- Maintain system requirements and historical file for CAVTS input for recurring reports using the web-tool

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.2	Cost Department		(301) 342-0180, 0240, 2405
AIR-3.6	Logistics Systems & Analysis		(301) 757-8787

## REF –

Configuration management policy memo (Ser A-1.1.5/01-009), requires APML certify that FHP impact has been provided to N78CF

NAVSUP draft policy memo requires NAVICP to work with NAVAIR APMLS to ensure that each special program budget request has a corresponding issue sheet loaded in CAVTS

## LINKS –

<https://qtrdeck.nalda.navy.mil/cavts>

Logistics Tool Box

<https://www.nalda.navy.mil/>

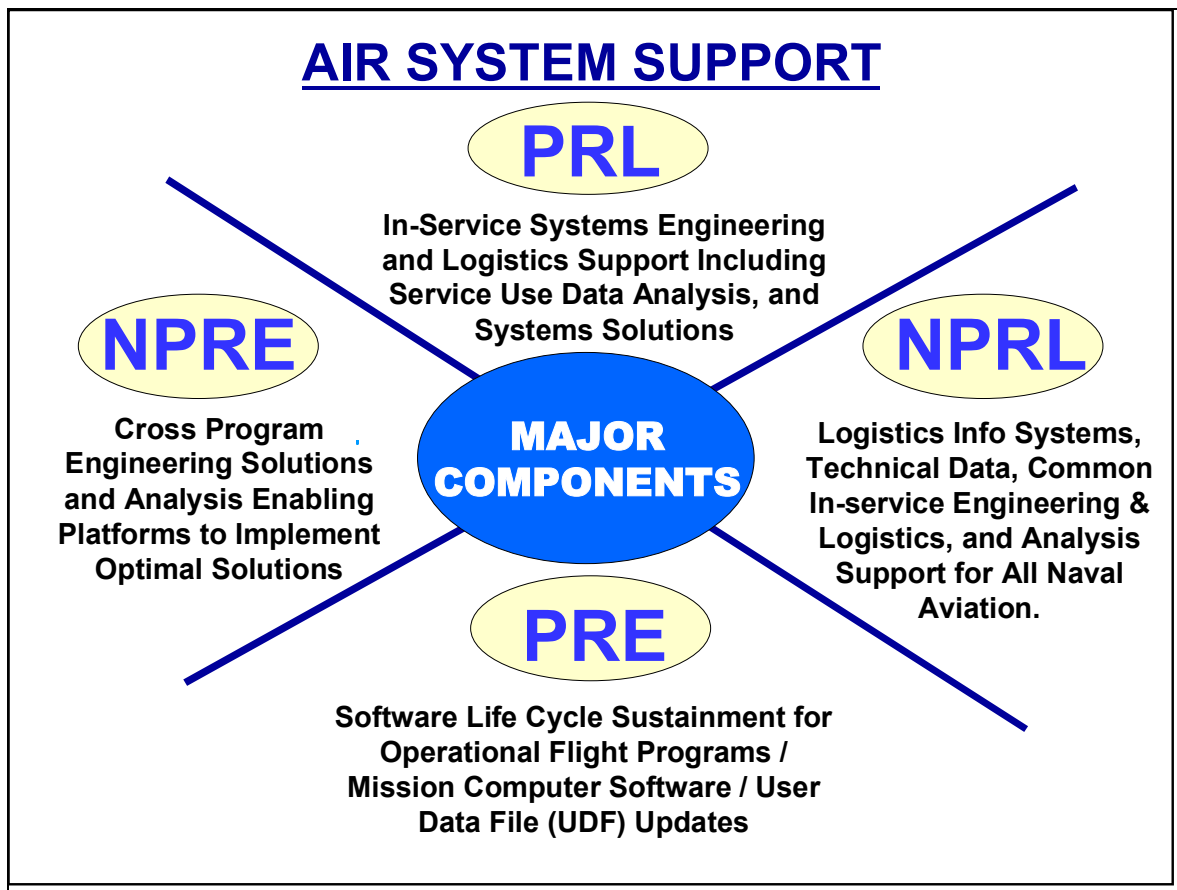
Logistics Tool Box

## D-7 - PROGRAM RELATED ENGINEERING (PRE)

**WHO** – NAVAIR, PEO, PM, APML, APMSE, FST, OPNAV, Fleet

**WHAT** –

- O&MN Funding for the Software Support Activities (SSAs) in-service software life cycle sustainment of Operational Flight Programs (OFP), Mission Computer Software, and User Data File (UDF) updates including; **Funding (BA-4B4N)** O&MN, BA-4 (Budget Activity (4) Administrative Services Support – 4B (Activity Group (AG) Logistics Operations and Technical Support- 4N Sub-Activity Group SAG Air Systems Support, Program Related Engineering (PRE).
  - **System Sustainment Tasks;**



## PRODUCTS PROGRAM RELATED ENGINEERING

### PROVIDE FLEET SOFTWARE (S/W) LIFECYCLE MAINTENANCE

STR TRACKING & ANALYSIS	PRI 1 STR FIXES
S/W PLANNING & OAG SUPPORT	S/W DOCUMENTATION UPDATES
S/W FACILITIES & DATA MAINTENANCE	FLEET INTRODUCTION SUPPORT
INTEROPERABILITY PRI 2 STR FIXES	AGING SW/OBSOLESCENCE ISSUE
OTHER STR FIXES/OPERATIONAL FLIGHT PROGRAM UPDATES	

### USER DATA FILE (UDF) UPDATES (I.E. THREAT LIBRARIES, ETC)

ACTIVE THEATRE UDF UPDATES  
OTHER THEATRE UDF UPDATES

### IMPROVE SOFTWARE BUSINESS PROCESSES AND PRACTICES

S/W PROCESS IMPROVEMENT, STANDARDIZATION  
SSA RESTRUCTURE (I.E. RESOURCE SHARING, CONSOLIDATION)

**PROVIDE FOLLOW ON OPERATIONAL TEST AND EVALUATION (FOT&E) SUPPORT**  
PLATFORM FOT&E SUPPORT

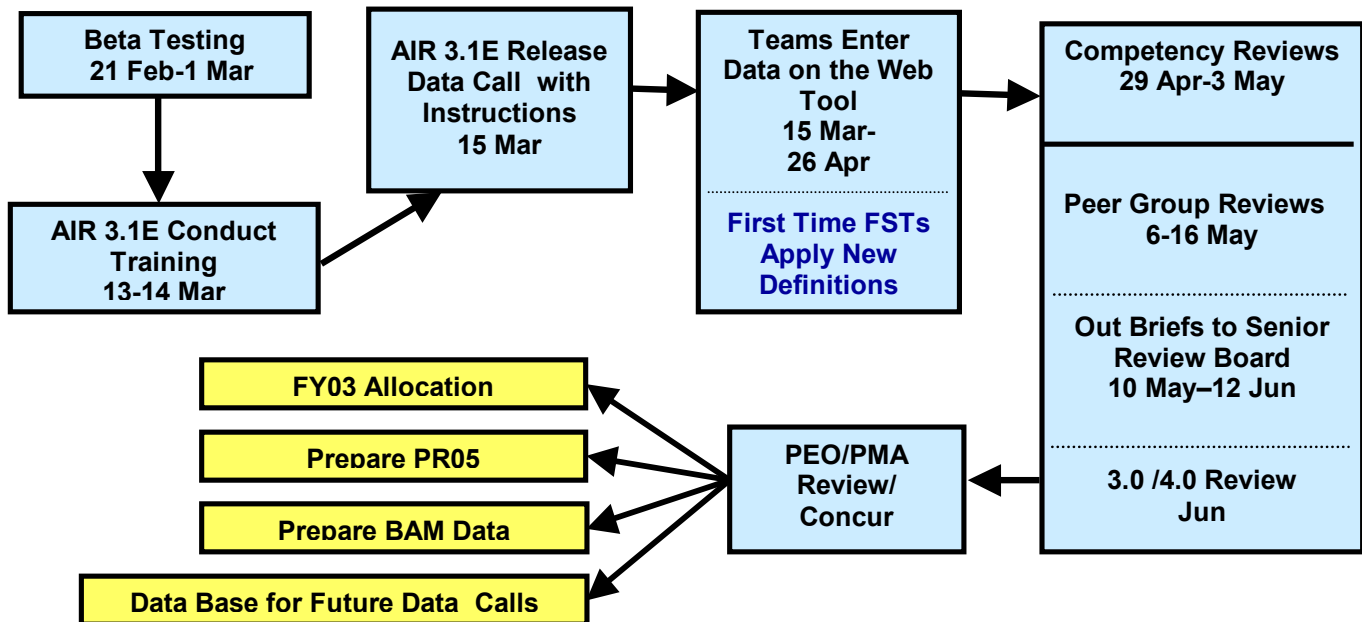
## WHY –

- **Improves;**
  - Safety, Readiness and Supportability of entire inventory
  - Quality of Fleet Maintainers
  - Cost of operations to Warfighter

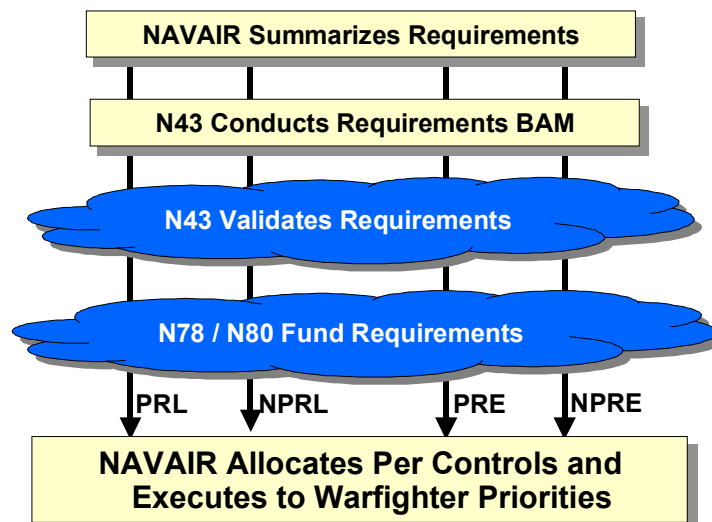
## WHEN –

- Initial PRE requirements should be identified Not Later Than (NLT) the POM year prior to the system delivery to the fleet
  - Initiate requirements based on, Requirements Determination (ReDet) for inclusion into the PRL/PRE POM
- Annually thereafter (program review)
  - Peer Group Review (conducted during POM year)
  - Senior Board Review (final PRE review following the Board and 3.0 approval)

## PROCESS AND SCHEDULE



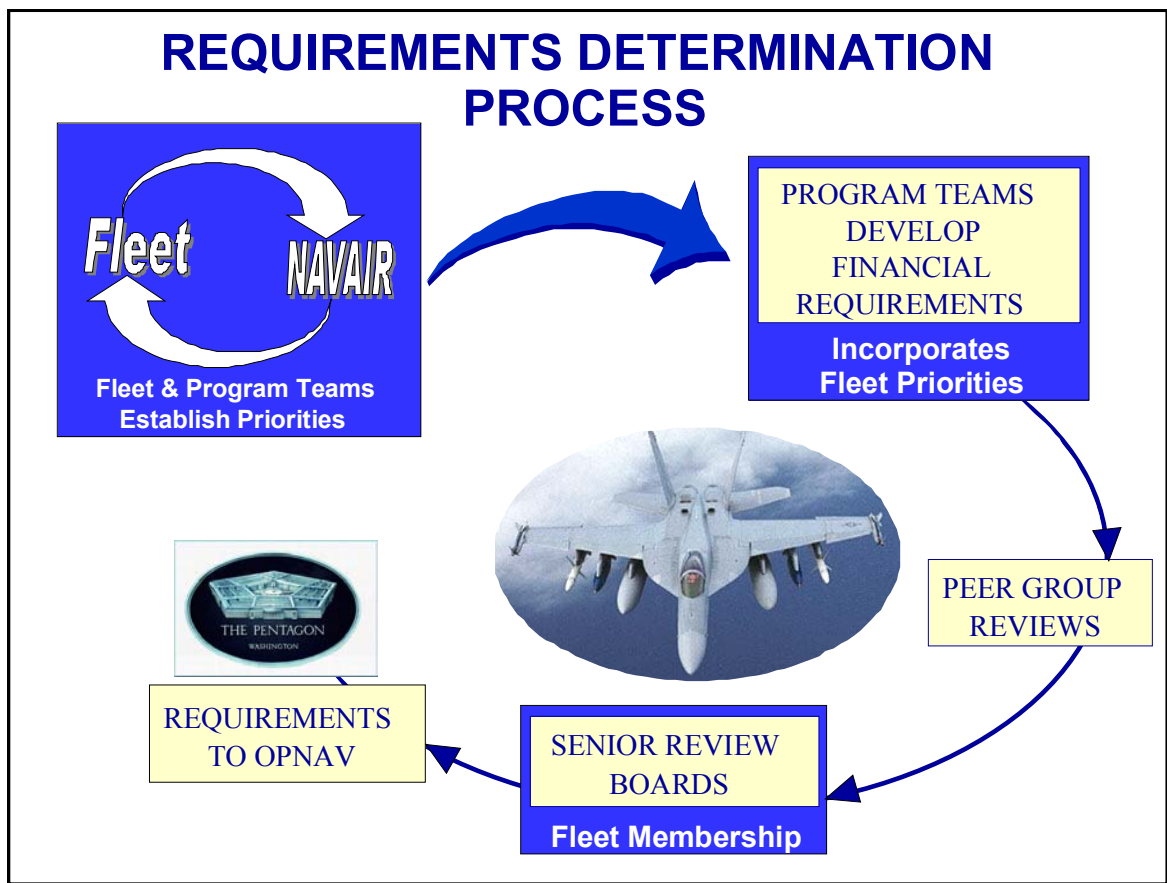
## BUDGET PROCESS



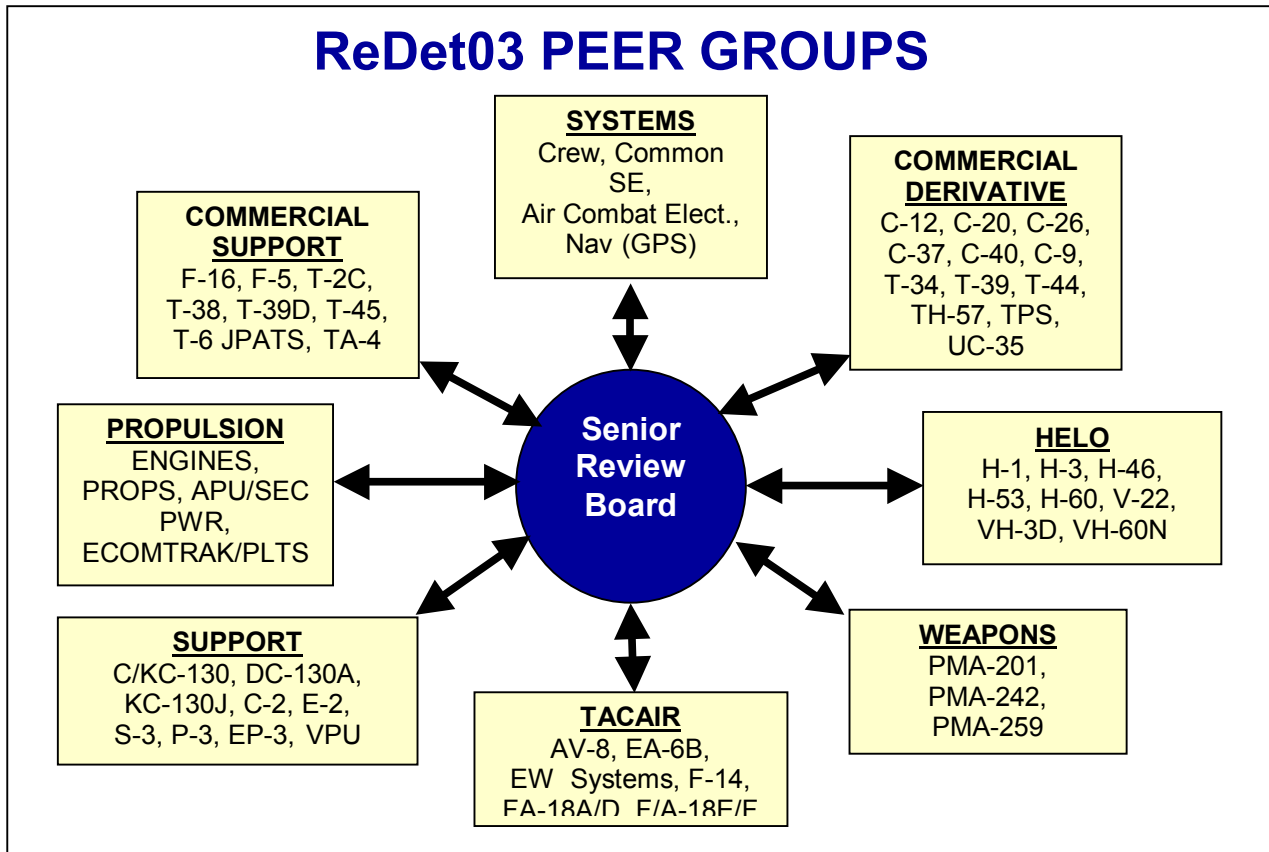
**WHERE** – NAVAIR, PEO, FST, SSA, FLEET, OPNAV

## HOW –

- The PRE call letter initiates the current year requirements development and review process including;
  - Guidelines to be used
  - When PRE Database will be opened for system requirements entry
  - Peer Group review schedule
  - Any new process changes for the requirements review and approval
- **PRE Process:** Provides an independent assessment of:
  - PRE requirements across the FYDP
  - FYXX PRE requirements
  - Safety of Operations (SOO), Near Term Readiness and Future Readiness
  - SOO (minimum Level of support for safe operations)
  - Understanding of the underlying technical basis



- **PRE Review Structure:** Aircraft platforms and weapons systems divided into 8 Peer Groups based on similar design/mission characteristics. The Peer groups include:



- **PRE Requirements WBS:**
  - By product group (mission computer software/Operational Flight Program software programs/User Data File)
  - Based on Activity Based Costing (ABC) Work Breakdown Structure (WBS)
  - Team allocated in-service effort, by man-years, against the software programs and associated systems (products).
  - This includes:

## REQUIREMENT CATEGORIES

- **Safety of Operation (SOO)**

- Threshold Level of In-Service Engineering and Logistics (ISE&L) Effort by the FST that enables service use of a system with Managed Risk.

- **Near Term Readiness**

- Fleet Support on other than Safety of Operations issues
- Analysis of Leading Cost Drivers/Readiness Degraders/Canns
- Implementing solutions to Leading Cost Drivers/Readiness Degraders/Cann issues with fleet impact within 24 months

- **Future Readiness**

- Analysis of other Cost Drivers/ Readiness Degraders/ Cann issues
- Implementing solutions to Leading Cost Drivers/ Readiness Degraders/ STRs, issues with impact in 24+ months

## SAFETY OF OPERATIONS

- **FST/SSA Safety of Operation (SOO)**

- Threshold Level of In-Service Engineering and Logistics (ISE&L) Effort by the SSA/FST that enables Service use of a system with Managed Risk.

- **SOO Includes Three Critical Tasks**

- **Monitor and Collect** All Service-Use Information
- **Triage** All Service Use Data To Prioritize SOO Problems
- Perform Necessary Work (CM, Eng., Log.) To **Resolve SOO Problems**

- **FST/SSA Support Levels Below SOO**

- Will Constitute Unmanaged Risk Operation of a System Inconsistent With Established Naval Air Systems Command Management Practice and Policy.

## NEAR TERM READINESS

**Near Term Readiness:** To implement program, operational or functional requirements on an aircraft or weapons system that preserves or enhances the availability of the weapon system and capability of the weapon system to perform it's current mission profile. Requirements can be divided into four types, all with fleet impact in 24 months or less. These requirements with examples are provided below:

- **Non-Safety Fleet Responses**
  - Els, NAMDRPs, STRs, Other Inquiries
- **Perform Non-Safety Related Efforts**
  - IMC, RCM, PMA Dets, Remaining Technical Manual Updates
- **Analysis of Top STRs, FHP Cost Drivers, Readiness Degraders, Canns**
  - Identify Root Causes, Identify Solutions, and Develop Plans/Budgets to Implement Those Solutions
- **Implementation of PRE-Funded Solutions** That Can Be Completed Within 24 Months

## FUTURE READINESS

**Future Readiness:** - To implement a decision, program, operational or functional requirements on an aircraft or weapons system that preserves or enhances the availability of the weapon system and capability of the weapon system to perform it's current mission profile. These efforts would not begin to substantially impact the fleet for 2-4 years.

- **Perform Trigger Based Asset Management**
  - Create Metrics for Program Repairables
  - Monitor Those Metrics To Trigger Analysis When Limits Are Exceeded
- **Analysis of Remaining FHP Cost Drivers, Readiness Degraders, Canns**
  - Identify Root Causes, Identify Solutions, and Develop Plans/Budgets to Implement Those Solutions
- **Implementation of 2-4 Year Solutions**



## WBS

76 Programs		22 Product Groups																
		Avionics (2)	Dynamic Components (3)	Environmental	Flight Controls/Hydraulics	Fuel	Propulsion (4)	Structures	Weapons	Crew Systems	Electrical	Support Equip	ATE	IMC	OOMA Baseline Update	PMA Dets	Tech Pubs	
Platforms																		
Systems																		
Weapons																		
Selected Engines																		

# EXCERPT OF ReDet03 COMMON PRODUCT GROUP FORM

		<u>Safety of OPs</u>	<u>Near Term Readiness</u>	<u>Future Readiness</u>	Total
4	In Service Engineering & Logistics Support				
4.1	Plan/Manage ISE/LS Workload/Taskings	0	0	0	0
4.2	Receive/Collect Fleet Requests and System Data				
4.2.1	Receive/Interpret/Evaluate Fleet/User Requests for Emergency Issues/Problems				
4.2.1.1	Receive/Review EI Requests (NAM DRP)	0			0
4.2.1.2	Receive/Review other NAM DRP Requests (HMR, EMR, QDR, TDR & AR)	0			0
4.2.1.3	Receive/Respond to Fleet/User Inquiries (calls, messages, etc.)	0	0		0
4.2.2	Receive/Collect System Data	0	0		0
4.3	Analyze Fleet Requests and System Data				
4.3.1	Analyze System Data to Identify System Problems/Opportunities	0	0	0	0
4.3.2	Determine Root Causes				
4.3.2.1	Perform Routine & Safety EI	0	0		0
4.3.2.2	Perform Mishap EI	0			0
4.3.2.3	Perform Other Root Cause Investigations/Analysis	0	0	0	0
4.3.3	Evaluate & Determine Solutions				
4.3.3.1	Perform RCM Analysis		0		0
4.3.3.2	Perform Cost Analysis (LECP, ROI, Maint Trade-offs, etc.)		0	0	0
4.3.3.3	Perform Technical Analysis/Evaluation	0	0	0	0
4.3.3.4	Perform Obsolescence Trade-off Analysis		0	0	0
4.3.3.7	Generate/Review/Evaluate Beneficial Suggestions (Formal Process)		0		0
4.4	Implement Corrective Actions				
4.4.1	Develop ECP and Technical Directive (TD)				
4.4.1.1	Develop Hardware ECP	0	0	0	0
4.4.1.2	Develop & Issue Formal/Interim/AM EC TD for H/W Config Changes	0	0	0	0
4.4.1.3	Develop & Issue S/W Maintenance Configuration Changes	0	0	0	0
4.4.1.4	Prepare/Issue Bulletins	0	0		0

**APML ROLE –**

- Coordinate with the AIR-3.1E PRL/PRE lead for requirements generation, review and approval process
- Conduct thorough review of all in-service technical support requirements with the BFM, FST site lead and Software Support Activity (SSA)
- Establish PRE requirements for system program IAW policy and guidelines
- Execute the PRE process

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	Program Related Engineering	NAVAIR 4.5	(301) 342-2210

**REF** - NAVAIRINST 40XX.1 (TBD)

**LINKS –**

[www.nalda.navy.mil/amsr](http://www.nalda.navy.mil/amsr)

Logistics Tool Box

[air30.kmspectrum.net/logistics.nsp](http://air30.kmspectrum.net/logistics.nsp) (*password required*)

# **APPENDIX E**

## **ACQUISITION STRATEGY**

### **Table of Contents**

E-1 - ACQUISITION STRATEGY

E-2 - COST ESTIMATING/REDUCED-TOTAL OWNERSHIP COST (R-TOC)

E-3 - EARNED VALUE MANAGEMENT (EVM)

E-4 – PROCUREMENT

E-5 – RISK MANAGEMENT

E-6 - WARRANTIES

## E-1 - ACQUISITION STRATEGY

**WHO** – PEO, PM, IPTs

**WHAT** – Mandatory document describing the PM's strategy to guide program execution from initiation through reprocurement of systems, subsystems, components, spares, and services beyond the initial production contract award and during post-production. The PM may chose to develop the Acquisition Strategy as a stand-alone document or as part of a multi-purpose document, a Navy Master Acquisition Program Plan (MAPP).

**WHY** – To minimize the time and cost it takes, consistent with common sense and sound business practices, to satisfy identified, validated needs, and to maximize affordability throughout a program's useful life cycle.

**WHEN** – In preparation for and prior to the program initiation, Milestone B, and update prior to all major program decision points or whenever the approved acquisition strategy changes or as the system approach and program elements become better defined.

**WHERE** – USD (AT&L), ASN (RDA), PEO

**HOW** – The Acquisition Strategy document, is developed by the PM, IPT, including the APML and requires coordination with members of the logistics team. The mandatory procedures require specific information related to product support strategies to addresses by the PM. The APML will be responsible for addressing those areas in detail to satisfy the IPT and approval authority. Links below provide the detail information for initiation of the document and the required information.

**APML ROLE –**

- Develop and document the intended support strategy for life cycle sustainment and continuous improvement of the product to ensure availability (readiness), supportability and affordability.
- Ensure support considerations are included in the program acquisition strategy.
- Ensure support strategy defines the supportability planning, analyses, and trade-offs conducted to determine the optimum support concept for a material system and strategies for continuous affordability improvement throughout product life cycle.
- Ensure by milestone C, the strategy contains sufficient detail to define how the program will address the support and fielding requirements that meet readiness and performance objectives, lower total ownership cost, reduce risks and avoid harm to the environment and human health.
- The primary areas to address include but not limited to;
  - Product support management planning
  - Affordability improvements
  - Source of support
  - Human systems integration
  - Environment, safety, and occupational health
  - Post deployment evaluation
  - Long term access to data to support competitive sourcing, parts obsolescence, technology insertion, and risk assessments.

**POC – PM, PEO**

**REF** - DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002)

**LINKS –**

<http://dod5000.dau.mil/>

New 5000 Resource Center

## E-2 - COST ESTIMATING / REDUCED-TOTAL OWNERSHIP COST (R-TOC)

**WHO** – PM, APML, NAVAIR: PAX: 4.2.5/3.6, APMSE, IPTs

**WHAT** – Defense acquisition policy, as stated in DEPSECDEF Memo dtd 30 October 2002, includes the requirement to obtain quality products, “ at a fair and reasonable price.” Requirements include the need to:

- Minimize the cost of ownership in the context of a total system approach (i.e. Reduced-Total Ownership Cost (R-TOC)).
- View cost in the context of Cost As An Independent Variable (CAIV), recognizing that the majority of costs are determined early in the program.
- Work closely with the user to achieve a proper balance among cost, schedule and performance while ensuring that systems are both affordable and cost effective.

### **Total Ownership Cost**

**Total Ownership Cost:** The total cost of a system beginning from inception and continuing through disposal. Emphasis has been placed on the use of Reduced-Total Ownership Cost (R-TOC) as a tool in resource allocation. The R-TOC of a system is substantially locked-in before the hardware is fielded. Figure E-2-3 illustrates that approximately 80% of the R-TOC is determined by Milestone B. Attention ***must*** be given to Product Support decisions in Concept Exploration of Component Advanced Development

**CAIV:** The latest in a series of terms intended to put focus on life-cycle cost. Past and current initiatives have addressed Should Cost, Budget To Cost, and Design To Cost (DTC), with variations such as Design-to-unit Production Cost (DTUPC) and Design to Life-cycle Cost (DTLCC). Additionally, terms such as Life-cycle Cost Procurement (LCCP) and Life-cycle Cost Management (LCCM) have come into common usage as cost concepts have been applied in an effort to comply with policy documents. The current DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002) includes Program Acquisition Unit Cost, Average Procurement Unit Cost (undefined), and Average Unit Procurement Cost.

### ***The objectives of CAIV:***

- Setting realistic but aggressive cost objectives early in each acquisition program
- Devising and employing a process for accomplishing cost-schedule-performance tradeoffs during each acquisition phase and at each milestone decision point,
- Managing risks to achieve cost, schedule, and performance objectives,

- Devising appropriate metrics for tracking progress in setting and achieving cost objectives,
- Motivating government and industry managers to achieve program objectives, and
- Establishing in-place additional incentives to reduce operating and support costs for fielded systems.

**WHY –**

- DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002) Policy, For all Acquisition Category (ACAT) I and IA programs, a life-cycle cost estimate shall be prepared by the program office in support of program initiation (usually Milestone A) and all subsequent milestone reviews
- The Component's staffing authority shall prepare a staffing estimate for ACAT I programs in support of Milestone B and Milestone C.
- For ACAT I programs, the MDA may not approve entry into engineering and manufacturing development or production and deployment unless an independent estimate of the full life-cycle cost of the program and a staffing estimate for the program have been completed and considered by the MDA (10 USC §2434)

**WHEN –**

- Upon approval of a Mission Need Statement (MNS), an approach shall be formulated to set and refine cost objectives.
- By program initiation (usually Milestone A), each ACAT I and ACAT IA PM shall have established life-cycle cost objectives for the program through consideration of projected out-year resources, recent unit costs, parametric estimates, mission effectiveness analysis and trades, and technology trends.
- A complete set of life-cycle cost objectives shall include Research, Development, Test, and Evaluation (RDT&E), production, operating and support, and disposal costs.
- At each subsequent milestone review, cost objectives and progress towards achieving them shall be reassessed.
- At each milestone decision point, including the decision to start a new program, life-cycle costs, cost/performance/schedule tradeoffs, cost drivers, and affordability constraints will be among the major considerations.



**WHERE** – OSD, DoD Components (OPNAV N-78, HQMC), NAVAIR, PEO, PM

**HOW** – The challenge to the acquisition logistician is to champion the implementation of these concepts actively and aggressively through participation in the various Integrated Process Teams (IPTs). Knowledgeable use of Life-cycle Costing can be the catalyst in assuring affordability of systems when fielded for operations by the user.

**Life-Cycle Cost (LCC):** The life cycle of a system begins with the determination of a mission requirement and includes Research and Development (R&D), production, deployment, operation, support, and eventual disposal or demilitarization by the Department of Defense (DoD). Program phases may overlap considerably; in particular, R&D may not be completed before procurement begins.

**LCC Analysis:** (Iterative Process)

The LCC estimate must reflect program changes as they occur. LCC Management (LCCM) is the program office discipline used to incorporate LCC in program office decision making. The lead acquisition logistics manager will generally be tasked to provide Operating and Support (O&S) cost support for the LCC estimate.

**LCC Breakdown:** For purposes of cost estimating, LCC is typically divided into research and development, procurement, O&S, and disposal. The following descriptions provide a brief summary of the costs associated with each life-cycle phase (see Figure E-2-1):

- **R&D:** R&D consists of those costs incurred from program initiation at the conceptual phase through the end of engineering and manufacturing development. R&D costs include the cost for feasibility studies, modeling, tradeoff analyses, engineering design, development, fabrication, assembly and test of prototype hardware and software, system test and evaluation, associated peculiar support equipment, and documentation.
- **Procurement:** Procurement includes the costs associated with producing or procuring the prime hardware, support equipment, training, data, initial spares, and facilities.
- **O&S:** Consists of all costs incurred by the DoD to field/deploy the system including personnel, consumable and reparable parts, fuel, shipping, and maintenance.
- **Disposal:** Disposal captures costs associated with deactivating or disposing of a materiel system at the end of its useful life. Disposing of a materiel system can result in additional costs or a salvage value depending on the disposition. This cost is normally insignificant compared to the total LCC. The main exceptions to this include disposal of nuclear waste, missile propellants, and other materials requiring expensive detoxification or special handling.

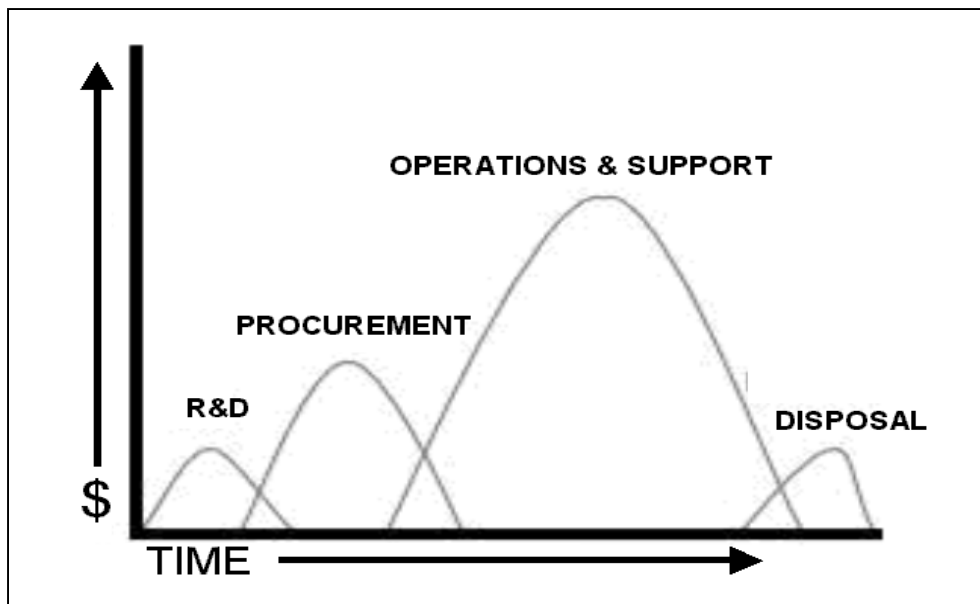


Figure E-2-1: -- Growth in Weapon System Life-Cycle Cost

***Design to Cost (DTC):*** (Establishes LCC as a Design Parameter)

- Requires the establishment of cost goals and strives to incorporate these goals into the system design.
- Initial DTC activity focuses on identifying system cost drivers, potential risk areas, and cost/schedule/performance tradeoffs.
- As development continues, efforts focus on identifying areas requiring corrective actions.
- Cost reduction techniques are applied to such areas to keep costs within an acceptable range.

***Depth and Accuracy of Estimates:***

- The depth and accuracy of cost estimates depend on the acquisition program phase and the use of the estimate.
- At Milestone A, very little will be known about the detailed design of the proposed system. However, affordability of the program must be evaluated, alternatives compared, and DTC goals established.
- The most significant impact on costs can be achieved prior to Milestone A. This is when major decisions, such as the selection of a manned vs. an unmanned system are made. Such decisions lock in major costs for the system.

- The opportunity to influence cost diminishes as the program matures. See Figure E-2-2 and Figure E-2-3.

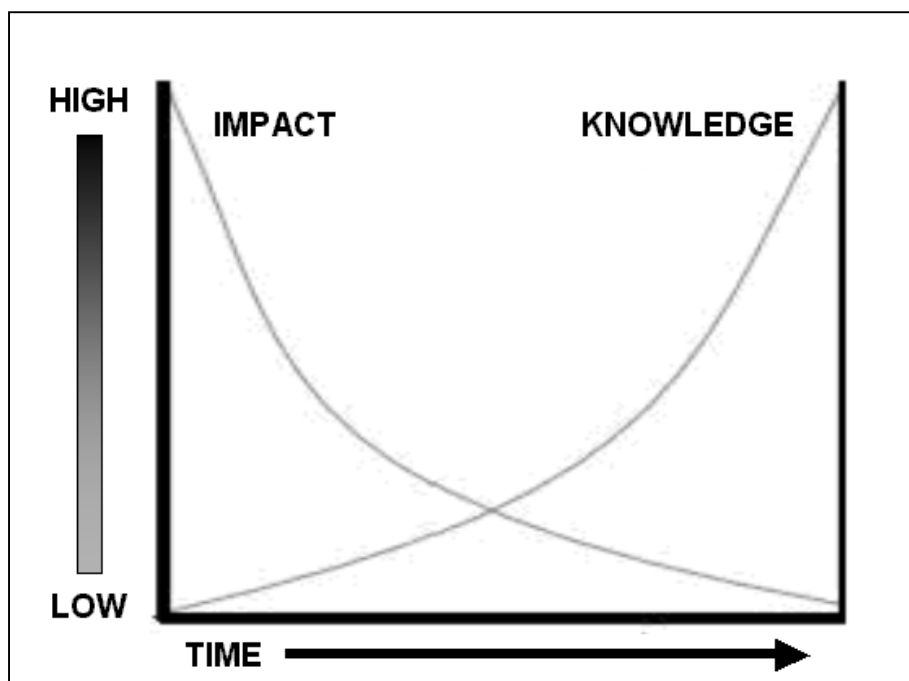


Figure E-2-2: - Entire Acquisition Time Line

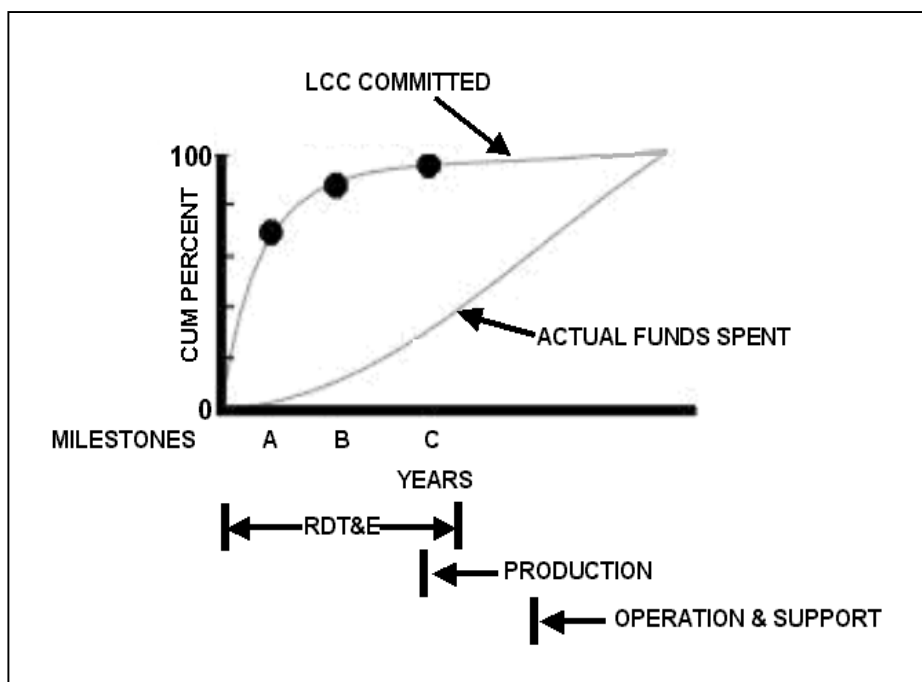


Figure E-2-3: - Early Impact of Decisions on Life-Cycle Cost

***Operations & Support (O&S) Cost:***

- Costs are those incurred by the DoD for the peacetime operations and maintenance of a system throughout its life cycle.
- Major determinants of O&S costs are design characteristics, reliability, maintainability, and mission requirements.

***Uses of O&S Cost Information:***

- O&S cost information is used for a variety of purposes throughout the acquisition process, including the following:
  - Support of the design-to-cost program
  - Support of milestone decisions
  - Discrimination among alternative designs
  - Support of budget estimates
  - Conducting Tradeoff Analysis

***Depth and Accuracy of Estimates:***

- As part of LCC estimating, the detail and accuracy of the O&S cost estimate also depends on the acquisition program phase at the time the estimate is initiated/revised/completed and the intended use of the O&S estimate.
- As a system is developed and designs and support concepts are evolved, O&S cost estimates and cost comparisons should become increasingly accurate.
- By Milestone B (CAD IPR), subsystem O&S cost drivers should be identified. Cost drivers are characteristics of a system or subsystem that influence a major share of the system cost. An understanding of the system's design is necessary for identification of system cost drivers.
- By Milestone C, The O&S cost estimates prepared are based on system design characteristics, deployment schedule, and operation and maintenance concepts. Operating experience obtained during system test and evaluation is used to verify progress in meeting O&S cost goals and to identify problem areas.

***Summary of the LCC Analysis Process:***

1. Defining the problem (the requirement for the analysis)
2. Analyzing the goals of the analysis
3. Selecting the elements of cost to include in the analysis
4. Select or construct a model
5. Collecting required model input data;
6. Running the model, including "what-ifs" and sensitivities
7. Performing analysis of model output data and developing conclusions
8. Documenting the analysis results and making recommendations.

***O&S Cost Methodology:***

- Determine methodology for the estimate
  - Purpose of the estimate
  - System under analysis
  - The acquisition phase
  - The data available.
- Using this information, a procedure for accomplishing an estimate could begin by
  - Establishing a set of study objectives
  - Determining the O&S cost of similar systems and budgeted or programmed O&S costs of the new system.
  - Reviewing, if applicable and available, the Analysis of Alternatives; and
  - Performing a “should cost” or cost reduction exercise.

***Ground Rules, Facts Bearing on the Problem, and Assumptions:***

- Based on the way the system will be operated, maintained, and supported in peacetime (if facts are not available)
- Include descriptions of relevant missions and system characteristics and manning, maintenance, support, and logistics policies
- All must be clearly stated and documented

***Select Comparable System:***

- May be an operational program with a mission similar to the proposed program
- It is often the system being replaced, unless another system provides a better reference for the analysis. There are a variety of sources within each Service for obtaining technical, performance, and cost data on comparable systems. The assumptions, ground rules, and cost estimating methodologies for both the comparable and proposed systems must be related. This is essential in order to identify differences in resource consumption due to differences in system characteristics. (use caution when considering data from a system acquired prior to the implementation of Acquisition Reform)
- Adjust system data to better approximate the proposed system

***Identify O&S Cost Drivers:***

- Must be identified early in the system life cycle
- Vary from program to program, but are defined as those elements in the program that have a major impact on system LCC
- As the *program* matures, should influence system design choices

- As the *design* matures, cost drivers will change.
- Alternative approaches, design tradeoffs, and sensitivity of O&S costs to changes should be evaluated within the “Analysis Of Alternatives” (AOA).

***Determine Cost-Estimating Technique:***

- Choice of technique depends on the maturity of the program and the data available.
- Most O&S analyses are accomplished using a combination of three estimating techniques:
  - Analogous system
  - Parametric (Top Down)
  - Engineering (Bottoms Up or Grass Roots)

***Analogous System:***

- A currently fielded system (a comparable system) that is similar in design and/or operation to the proposed system is identified. Taking the fielded system’s data and adjusting them to account for any differences then develops the cost of the proposed system.
- System may be a composite of several fielded systems. This technique of cost estimation is widely used.
- Detailed technical and engineering data required.
- Places heavy emphasis on the opinions of “experts.” Therefore, it is necessary to document clearly the rationale used to determine the composition of the analogous system and the adjustment factors used.

***Parametric:***

- Employs Cost-Estimating Relationships (CERs) to develop estimates using regression analysis. A CER is an equation that relates one or more characteristics of an item to some element of its cost. (For example, a study of existing avionics equipment may yield a CER relating avionics unit cost to the weight of the avionics system. This CER could then be used to predict avionics unit cost for a new system, which has weight that needs estimated.
- Used early in the life cycle of a system, when item specific data is not known. CERs must be examined to ensure they are current (i.e., reflect acquisition reform), appropriate for the range of data being estimated, and applicable to the system. If they are improperly applied, the result could be serious estimating errors.

***Accounting Estimates:***

- Uses engineering estimates of reliability, maintainability, and component cost characteristics (optempo rates) to build estimates from the “bottom-up” for each cost category.
- Require detailed system data. The system is typically broken down into lower-level components, and estimates of each component are made
- Can be complex and time consuming
- Method of choice when detailed system data is available

***Selecting the Most Appropriate Cost Model:***

- Depends on the purpose of the estimate
- System under analysis
- System acquisition phase
- System data available (most important)

***Model Characteristics (desired):***

- *Consistency:* Conforms to current O&S cost-estimating practices. (allows the proposed system to be compared to an analogous system)
- *Flexibility:* The model should be constructed so that it is useful in the early phases and can evolve to accommodate more-detailed information as the program continues through its life cycle.
- *Simplicity:* The model should require only the minimum data necessary to estimate the O&S cost. More complex models can be used as more data becomes available.
- *Usefulness:* The model should provide useful information to the decision makers in their evaluation of support and design tradeoffs.
- *Completeness:* O&S models should include all applicable costs for a system’s operation and support over its useful life.
- *Validity:* The model should be capable of providing logical, reproducible results.

***Cost Models in Wide Use: (in DoD)***

- Cost Analysis Strategy Assessment (CASA)
- Air Force’s Cost-Oriented Resources Estimating (CORE)
- Logistics Support Costs (LSC)

**Uses for O&S Cost Estimates:**

- Analysis Of Alternatives (AOA)
  - Aids decision makers in judging whether or not any of the proposed alternatives to an existing system offer sufficient military and/or economic benefit to be cost worthy.
- Tradeoffs
  - Once a baseline estimate is complete, the impact of program changes on O&S costs can be evaluated. When combined with schedule and performance data and an objective function, the estimate may support a CAIV-based tradeoff exercise.
- Independent Cost Estimate (ICE)
  - A cost estimate prepared by an objective nonprogram office team.
  - Decision makers use primarily to identify any inconsistencies with the program office estimate
  - An O&S cost estimate is a major portion of these ICE efforts

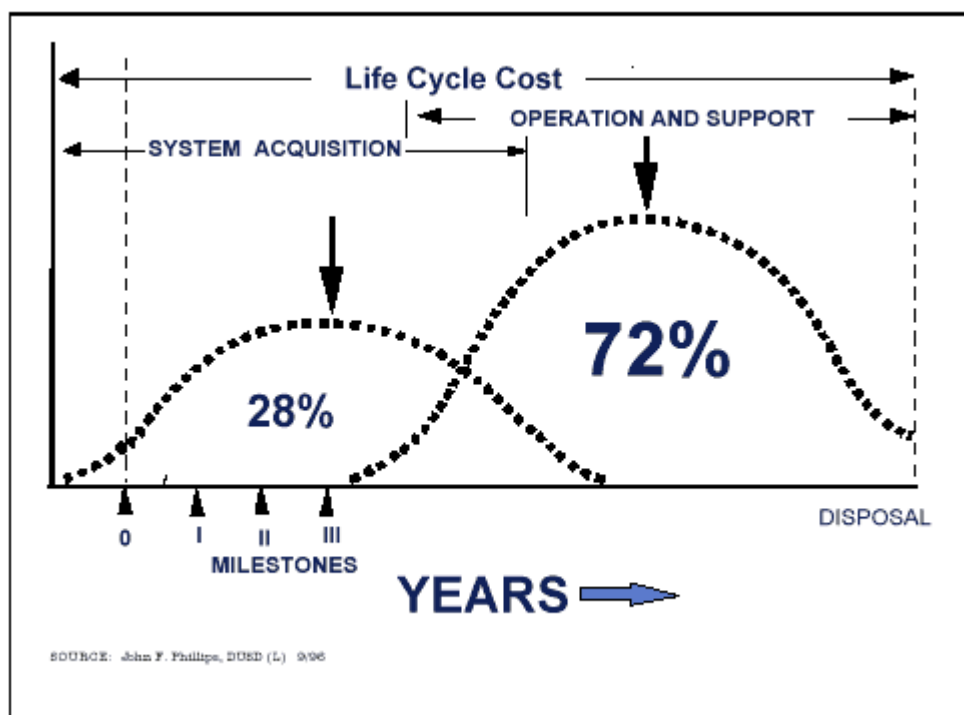


Figure E-2-4: Nominal Cost Distribution



**APML ROLE –**

- The APML's greatest influence is early in the design phase (Figure E-2-4 below)
- Interface with cost IPT leads is imperative to influencing the design and life cycle costs over the life of the program.
- Stay aware, get informed and seek help often.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.2	Total Ownership Cost		(301) 342-8276 Primary, (301) 342-0239 Alternate
AIR-3.6	Affordable Readiness		(301) 757-8789 Primary, (301) 757-8782 Alternate

**REF –**

DoD 5000.4-M, DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002)  
Maintenance Trade Study Guide

Navy Center for Cost Analysis, 1111 Jefferson Davis Highway Arlington, Virginia 22202-4306 / TEL: Comm (703) 604-0293 / E-Mail: [downsirene@ncca.navy.mil](mailto:downsirene@ncca.navy.mil)

“Acquisition Logistics,” Department of Defense Handbook (MIL-HDBK-502), prepared by USAMC Logistic Support Activity, ATTN: AMXLS-ALD, Building 5307, Redstone Arsenal, AL 35898-7466.

**LINKS –**

[DoD 5000.4-M, Department of Defense Cost Analysis Guidance and Procedures 11 December 1992](#)

C1. -- Chapter 1 Guidelines for the Preparation and Maintenance of a Cost Analysis Requirements Description (CARD) (Mandatory)

<http://dod5000.dau.mil/>

DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6/coo/000000003/sld001.htm>

Logistics Tool Box

[www.ncca.navy.mil/ncca.htm](http://www.ncca.navy.mil/ncca.htm)

Navy Cost Center Analysis

<http://www.logsa.army.mil:80/logsa.htm>

Engineering Logistics and Field Support Center (ELFSC) Web Site!

## E-3 - EARNED VALUE MANAGEMENT (EVM)

**WHO** – NAVAIR, PM, APML, APMSE, IPTs

**WHAT** – Management approach that provides a continuous measurement of the quantity and "value" of work actually accomplished.

- The concept originated more than 30 years ago within the Department of Defense
- Today, it is recognized throughout both government and industry as an effective tool for project management
- Use of EVM results in the integration of work scope, schedules, and cost.

**WHY** – Provides uniform standards to ensure that cost, schedule, and technical aspects of a contract are integrated during program execution.

**WHEN** – Program execution or contracts that benefit from EVM use.

**WHERE** – NAVAIR, PM, Field Activities, Prime Contractor

**HOW** –

### Introduction and Purpose

Use of these Earned Value Management Systems (EVMS) guidelines is mandatory on selected contracts. The contractors' management control systems shall include policies, procedures, and methods that are designed to ensure that they will meet the guidelines shown below. These guidelines are reproduced from the American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) EVMS standard (ANSI/EIA-748-98), Chapter 2. Guidance for implementing these guidelines on DOD contracts can be found in the Earned Value Management Implementation Guide (EVMIG) in the Defense Acquisition Deskbook.

### Organization

Define the authorized work elements for the program;

- A work breakdown structure (WBS), tailored for effective internal management control, is commonly used in this process.
- Identify the program organizational structure
  - Major subcontractors responsible for accomplishing the authorized work
  - Define the organizational elements in which work will be planned and controlled.
- Provide for the integration of the company's planning, scheduling, budgeting, work authorization and cost accumulation processes with each other, and as appropriate, the program work breakdown structure and the program organizational structure.

- Identify the company organization or function responsible for controlling overhead (indirect costs).
- Provide for integration of the program work breakdown structure and the program organizational structure in a manner that permits cost and schedule performance measurement by elements of either or both structures as needed.

## **Planning, Scheduling, and Budgeting**

Schedule the authorized work in a manner, which,

- Describes the sequence of work
- Identifies significant task interdependencies required to meet the requirements of the program.
- Identify physical products, milestones, technical performance goals, or other indicators that will be used to measure progress.
- Establish and maintain a time-phased budget baseline, at the control account level, against which program performance can be measured. Initial budgets established for performance measurement will be based on either internal management goals or the external customer negotiated target cost including estimates for authorized but undefinitized work. Budget for far-term efforts may be held in higher-level accounts until an appropriate time for allocation at the control account level. On government contracts, if an over target baseline is used for performance measurement reporting purposes, prior notification must be provided to the customer.
- Establish budgets for authorized work with identification of significant cost elements (labor, material, etc.) as needed for internal management and for control of subcontractors.
- To the extent it is practical to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units. Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.
- Provide that the sum of all work package budgets plus planning package budgets within a control account equals the control account budget.
- Identify and control level of effort activity by time-phased budgets established for this purpose. Only that effort which is unmeasurable or for which measurement is impractical may be classified as level of effort.

- Establish overhead budgets for each significant organizational component of the company for expenses, which will become indirect costs. Reflect in the program budgets, at the appropriate level, the amounts in overhead pools that are planned to be allocated to the program as indirect costs.
- Identify management reserves and undistributed budget.
- Provide that the program target cost goal is reconciled with the sum of all internal program budgets and management reserves.

### **Accounting Considerations**

- Record direct costs in a manner consistent with the budgets in a formal system controlled by the general books of account
- When a work breakdown structure is used, summarize direct costs from control accounts into the work breakdown structure without allocation of a single control account to two or more work breakdown structure elements.
- Summarize direct costs from the control accounts into the contractor's organizational elements without allocation of a single control account to two or more organizational elements.
- Record all indirect costs which will be allocated to the contract.
- Identify unit costs, equivalent units costs, or lot costs when needed.
- For EVMS, the material accounting system will provide for:
  - Accurate cost accumulation and allocation of costs to control accounts in a manner consistent with the budgets using recognized, acceptable, costing techniques.
  - Cost performance measurement at the point in time most suitable for the category of material involved, but no earlier than the time of progress payments or actual receipt of material.
  - Full accountability of all material purchased and all material transfers for the program, including the residual inventory.

## Analysis and Management Reports

- At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system:
- Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance.
- Comparison of the amount of the budget earned and the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.
- Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management.
- Identify budgeted and applied (or actual) indirect costs at the level and frequency needed by management for effective control, along with the reasons for any significant variances.
- Summarize the data elements and associated variances through the program organization and/or work breakdown structure to support management needs and any customer reporting specified in the contract.
- Implement managerial actions taken as the result of earned value information.
- Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements.

## Revisions and Data Maintenance

- Incorporate authorized changes in a timely manner, recording the effects of such changes in budgets and schedules. In the directed effort prior to negotiation of a change, base such revisions on the amount estimated and budgeted to the program organizations.
- Reconcile current budgets to prior budgets in terms of changes to the authorized work and internal replanning in the detail needed by management for effective control.

- Control retroactive changes to records pertaining to work performed that would change previously reported amounts for actual costs, earned value, or budgets. Adjustments should be made only for correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data.
- Prevent revisions to the program budget except for authorized changes.
- Document changes to the performance measurement baseline.

## APML ROLE – NA

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.2.5	Cost Analysis	NAVAIR HQ	

### REF –

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002) Appendix 4  
Defense Acquisition Deskbook

Headquarters Air Force Materiel Command  
Wright-Patterson Air Force Base, OH 45433-5000

AFMC PAMPHLET 173-5

Assistant Secretary of the Army (RD&A),  
Washington, D.C. 20310

DA PAMPHLET 715-5

Assistant Secretary of the Navy (RD&A)  
Washington DC 20360-5000

NAVSO PAMPHLET 3627

Headquarters, Ballistic Missile Defense Organization, BMDO GUIDE 7007G  
Washington, D.C. 20301-7100

National Security Agency  
Ft. George G. Meade, MD 20755-6000.

NSA/CSS HANDBOOK N255-01

Headquarters Defense Logistics Agency  
Ft Belvoir, VA 22060-6221

DLA HANDBOOK 8400 2

Headquarters Defense Contract Audit Agency  
Ft Belvoir, VA 22060-6221

DCAA PAMPHLET 7641 47

**LINKS –**

<http://web1.deskbook.osd.mil/default.asp>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<http://www.acq.osd.mil/pm/jumps/jumps.html>

## E-4 - PROCUREMENT

**WHO** – PM, APML, BFM, APMSE, PCO

**WHAT** – Initiating the **“BUY”** process for product support requirements including;

- Hardware (SE, Spares, Trainers, Mod kits)
- Software
- Logistics documentation (analysis data, plans, documents)
- Support services (CMS/CETS manpower)

**WHY** – The primary process for acquiring the system support products

**WHEN** – Throughout system life cycle

**WHERE** – NAVAIR, Prime Contractor

**HOW** - The ALSP establishes the framework:

- *Its primary function is to document the Product Support acquisition strategy for the system based on the support requirements identified by the Maintenance Planning effort.*
- The Acquisition Plan (AP) for the system contains the product support strategy and is published by the PM.
- The Competition in Contracting Act (CICA) designates the AP as the principle document for program review and oversight.
- The AP is required before a formal solicitation or Commerce Business Daily (CBD) synopsis is issued, so early preparation of the AP is necessary.
- The PM is responsible for submission of the AP and for necessary reviews and for its approval.
- The process involves up to four phases. The PM is responsible for coordinating the concurrent efforts of the Class Desk, the APML, the Procuring Contracting Officer (PCO), the Business Financial Manager (BFM), and AIR-00.
- These individuals comprise the team that works directly with the PM in preparing the AP.
- It is the responsibility of team members to coordinate input for specific sections of the AP. The APML is responsible for providing Product Support inputs to the AP as illustrated in Figure E-4-1.

Requirement	APML	IPT LEAD	Program Manager
Acquisition Plan Inputs	Develops	Certifies	Approves

Figure E-4-1. The Role of the APML and the Acquisition Plan



The actions of the APML in this process are illustrated in Figure E-4-3. The ALSP is officially approved by the Program Manager and serves as the top-level document under which the Product Support Acquisition contract requirements are developed.

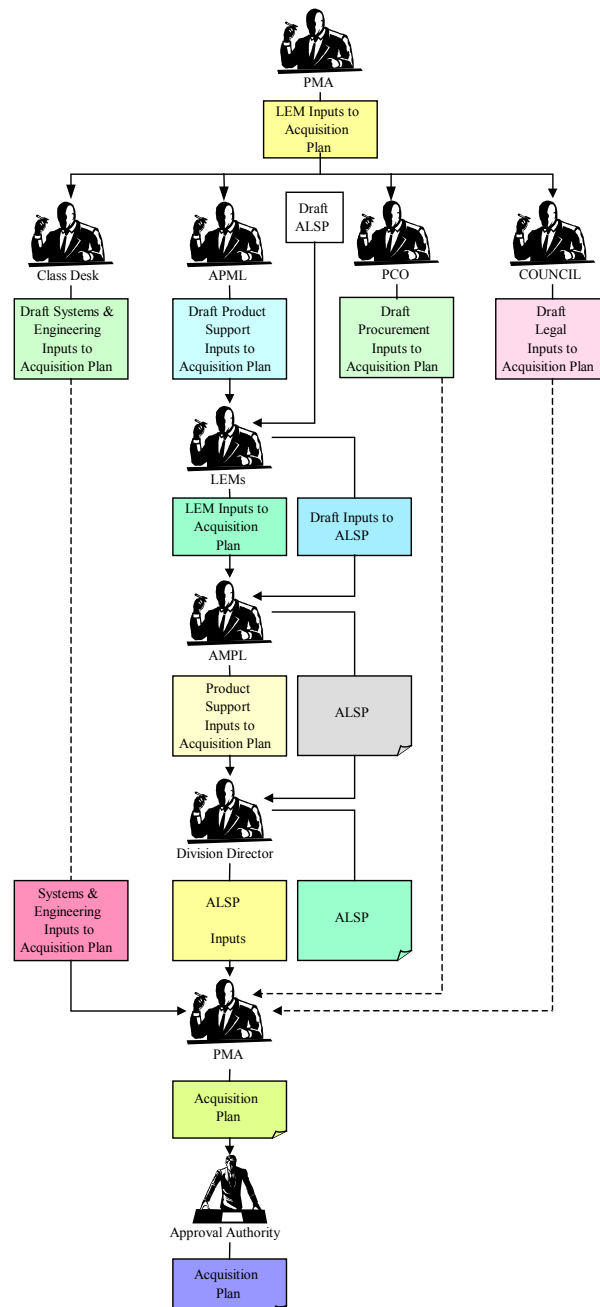


Figure E-4-2. Developing The AP Product Support

<b>Individual Requirement</b>	<b>LEM</b>	<b>APML</b>	<b>IPT Lead</b>	<b>PM</b>
Areas of the AP for support to be included in ALSP to establish Product Support Planning Data	Prepares Draft	Reviews	Certifies	Approves
• Executive Summary	-	Develops	-	-
○ Introduction	-	Develops	-	-
○ Background	-	Develops	-	-
○ Operational Scenario	-	Develops	-	-
○ Product Support Function	-	Develops	-	-
○ Technology Assessment	-	Develops	-	-
• Maintenance Capability and material support milestones	Develops	Approves	-	-
○ Maintenance Concept	Develops	Approves	-	-
• Maintenance Planning	Develops	Approves	-	-
○ Manpower and Personnel	Integrates	Approves	-	-
○ Supply Support	Integrates	Approves	-	-
○ Support Equipment	Integrates	Approves	-	-
○ Technical Data	Integrates	Approves	-	-
○ Training and Training Support	Integrates	Approves	-	-
○ Computer Resources Support	Develops	-	-	-
○ Facilities	Integrates	Approves	-	-
○ Packaging, Handling, Storage	Integrates	Approves	-	-
• Business Strategy	Develops	Approves	-	-
• Contracting Strategy	-	Develops	-	-
• Costs	Integrates	Develops	-	-

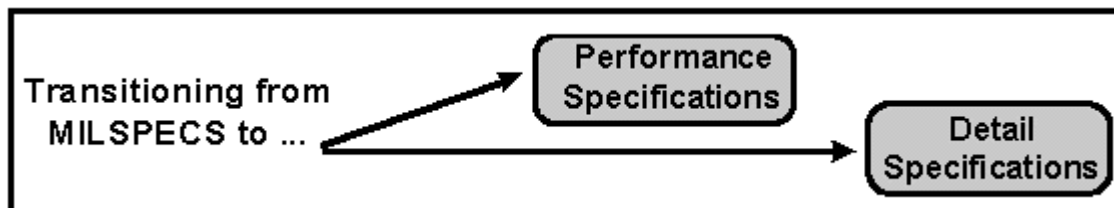
Figure E-4-3. The Role of the APML and the Planning Sections of ALSP

### Product Support Contract Requirements:

The APML develops Product Support contract requirements that combine to develop maintenance capability and material support planning and procurement. The APML ensures contract requirements are prepared, processed, and issued. These requirements involve:

- Contract Line Items
  - Section B – Supplies, Services, and Prices
  - Section C - Specifications
  - Section H - Special Provisions
- Product Support Specifications
- Contract Data Requirements List (CDRL)

Impacts on the environment due to the operation and maintenance of weapons and support systems are addressed by the APML early to avoid restrictions on systems mission and support.



### PERFORMANCE VERSUS DETAIL SPECIFICATIONS

Current DoD policy is to move to greater use of performance and commercial specifications and standards. This will increase DoD's access to commercial, state-of-the-art technology. As a result, DoD will gain direct access to the existing commercial industrial base for defense applications. To that end, the order of precedence for the use of specifications in acquisition is that performance specifications are always preferred over detail specifications.

A performance specification states requirements in terms of the required results and provides criteria for verifying compliance, but it does not state methods for achieving results. It defines the functional requirements for the product, the environment in which it must operate, and the interface and interchangeability requirements.

The following tables give examples of performance and detail requirements:

Examples of Performance Requirements	Reason
The circuit breaker shall not trip when subjected to the class 1, type A, shock test specified in MIL-S-901.	States required results.

Examples of Unnecessary Detail	Reason
The reinforcement shall consist of corrosion-resistant steel wires. Hose under 16Z shall have a single layer of braid, and hose 16Z and above shall have 2 layers of braid. The wires shall be arranged over the inner tube to provide sufficient strength to ensure conformance with the requirements specified herein.	Steel wires and layers of braid may not be the best way to reinforce the hose. The functional requirement is for the hose to withstand a specified amount of pressure.

### Contract Line Items:

Contract Line Items that the APML must consider are contained in sections B, C, and H of the contract. Section B defines what you intend to procure. Section B can contain two possible categories of requirements.

- Requirements for which sufficient specifications exist that permit procuring the requirement with the contract, (this is usually referred to as a "Firm Side Line Item").
- Requirements that are assumed to be required at some later point in time but for which specifications do not exist in sufficient detail to permit firm pricing. (These items, usually referred to as "order clauses or Provisioned Line Items", are designated as "No Specified Price" (NSP).)

Figure E-4-4 illustrates the two types of Section B contract line items.

CLIN	Supplies or Services	Quantity	Unit Price	Total
0001	Spares and Repair Parts	10	\$2000	\$20,000
0002	Data for 0001	NSP	NSP	NSP
0003	Repair of GFE		(See Section H)	

Figure E-4-4. Section B Supplies and Services

The significance of the difference between example line items 0001 and 0003 is important. When the contract is signed, spares and repair parts are ordered in accordance with a specification or Statement of Work (SOW) contained in Section C. Line item 0003 will not be ordered when the contract is signed but will be ordered at a later date in accordance with Section H. Figure E-4-5 illustrates what Section H language might be.

Section H – Special Contract Requirements  
Line Item 0003 – Services to be ordered later by order of ACO.

Figure E-4-5. Section B Deferred Ordering

The spares and repair parts that were ordered with the contract are procured against a specification contained in Section C. Figure E-4-6 illustrates the type of language that might appear in Section C for items procured with the contract.

Section C – Specification  
Line Item 0001 – The contractor will provide spares and repair parts in accordance with the Product Support Specification.

Figure E-4-6. Typical Section C Language

**Product Support Specification:**

The Product Support Specification, which is referred to in Section C, is the "specification" for the Product Support program. This document contains detailed contractually binding direction to the contractor on designing, developing, and delivering Product Support. The Contract Data Requirements List (CDRL) is the contractual paperwork through which data is procured. For example, if the APML decides to procure Maintenance Manuals, a CDRL must be completed. Figure E-4-7 illustrates the usual sections of a Product Support Specification, Contract Line Items, and CDRL and the role of the APML.

The Product Support Specification, Contract Line Items, and CDRL are administratively integrated. This integration is achieved through the ALSP. Figure E-4-8 illustrates the interrelationship of the ALSP and Product Support Contract Requirements. Two sections of the ALSP, milestones and business strategy, are used to construct the contracting strategy as illustrated in Figure E-4-9. Milestones and business strategy drive the structure of the items and CDRL delivery dates.

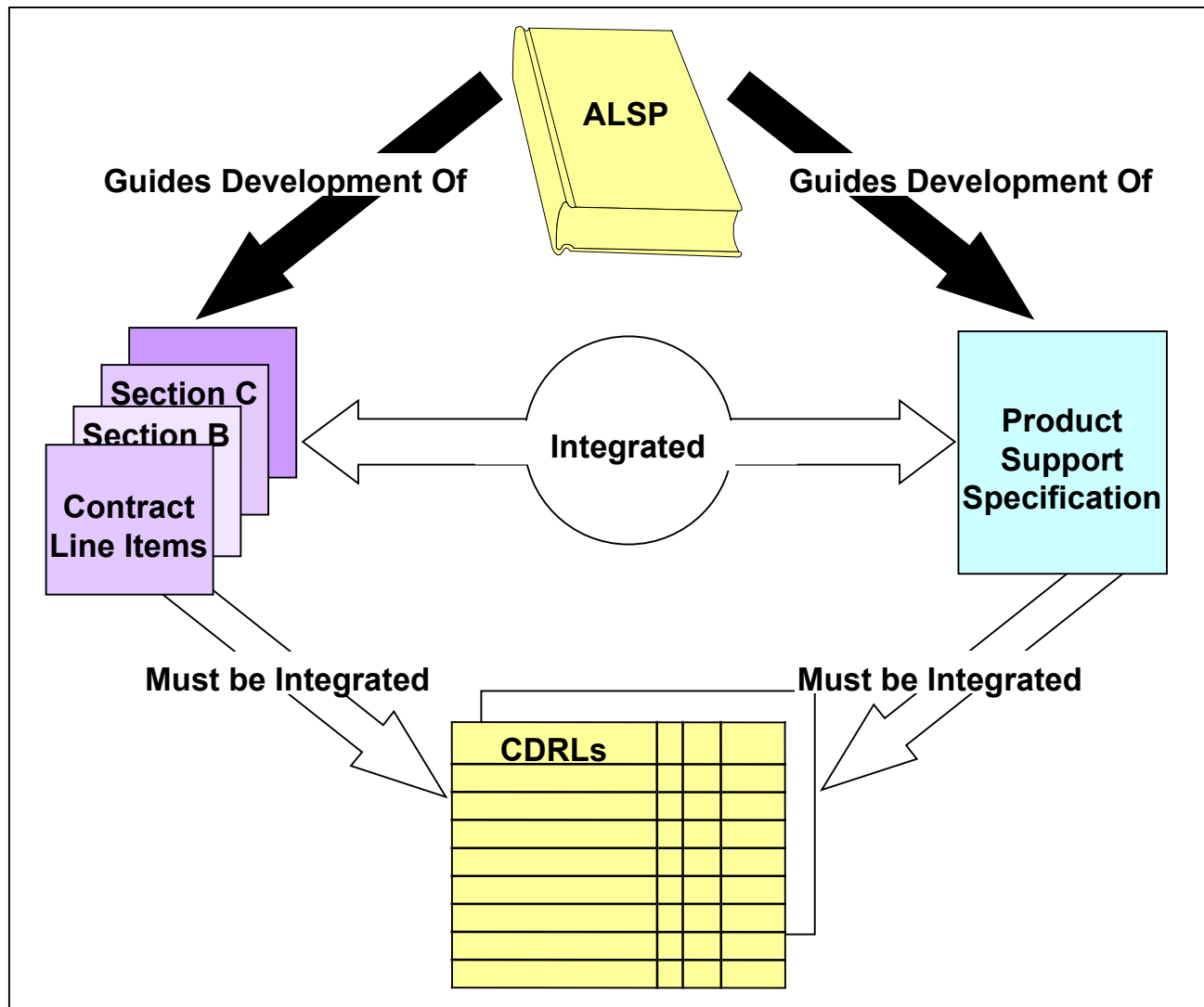
Additionally, milestones and business strategy are used to guide and assist in building the Product Support Specification Contract Line Items and CDRL. For example, if Technical Manuals are to be ordered in Contract Year 4, a contract line item must be established for Technical Manuals and a CDRL must be prepared with the date for delivery of the Technical Manuals for the maintenance capability and the Material Support Dates. Once the contracting strategy is developed, the Product Support Specification, CDRLs, and Contract Line Items can be developed.

Product Support Specification/CLI/CDRLs	LEM	APML	IPT lead	PM A
Introduction	-	Approves		
Support System Performance	-	Approves	--	--
Product Support Planning Integration and Management	-	Approves	--	--
Supportability Analysis	Develops	Approves	--	--
Maintenance Capability and Material Support	Develops	Approves	--	--
Product Support Evaluation and Supportability Program	Develops	Approves	--	--
Contractor and Navy Data Collection	Develops	Approves	--	--
Training and Training Equipment Requirements	Develops	Integrates	--	--
Maintenance Manpower Requirements	Integrates	Integrates	--	--
Technical Manuals	Integrates	Approves	--	--
Support Equipment and Product Support for SE	Integrates	Approves	--	--
Spares and Repair Parts	Integrates	Approves	--	-
Facilities	Integrates	Approves	--	
PHS&T	Integrates	Approves	--	--
Product Support for Engineering Proposals	Approves	--	--	--
Depot Rework	Integrates	Approves	--	--

Figure E-4-7. The APML and the Product Support Specification, Contract Items and CDRLs

This concept is illustrated in Figure E-4-10. For example, if Technical Manuals are to be procured in Calendar Year 4 (based on the contracting strategy) and are to be procured on the provisioned side of the contract in that year based on the business strategy, then the Product Support Specification should define contractual requirements that require the contractor to identify the Technical Manuals that are recommended according to "lead time away" from Calendar Year 4.

Also, there would be a line item on the firm side of the contract to procure this contractor's S Analysis effort in Calendar Year 2 and a provisioned line item to order the recommended manuals in Calendar Year 4. The APML's role in this process is to provide PSMP to LEMs and to request they provide line items, CDRLs, and Product Support Specification chapters that reflect the contracting strategy and business strategy of PSMP. The development of the Product Support Specification, as well as the Contract Line Items and CDRLs, if structured against PSMP ensures the integration of contractual requirements and creates a sound basis of procuring Product Support for the Fleet.



E-4-8. The ALSP and Product Support Contract Requirements

The APML may include as part of the contract a warranty program. To acquire quality and highly reliable weapon systems and subsystems, the warranty should:

- Complement and enhance the basic maintenance philosophy.
- Be written clearly and simply.
- Be cost effective.
- Allow the fleet to identify; document, and process warranted items in a manner that will not cause an undue burden.

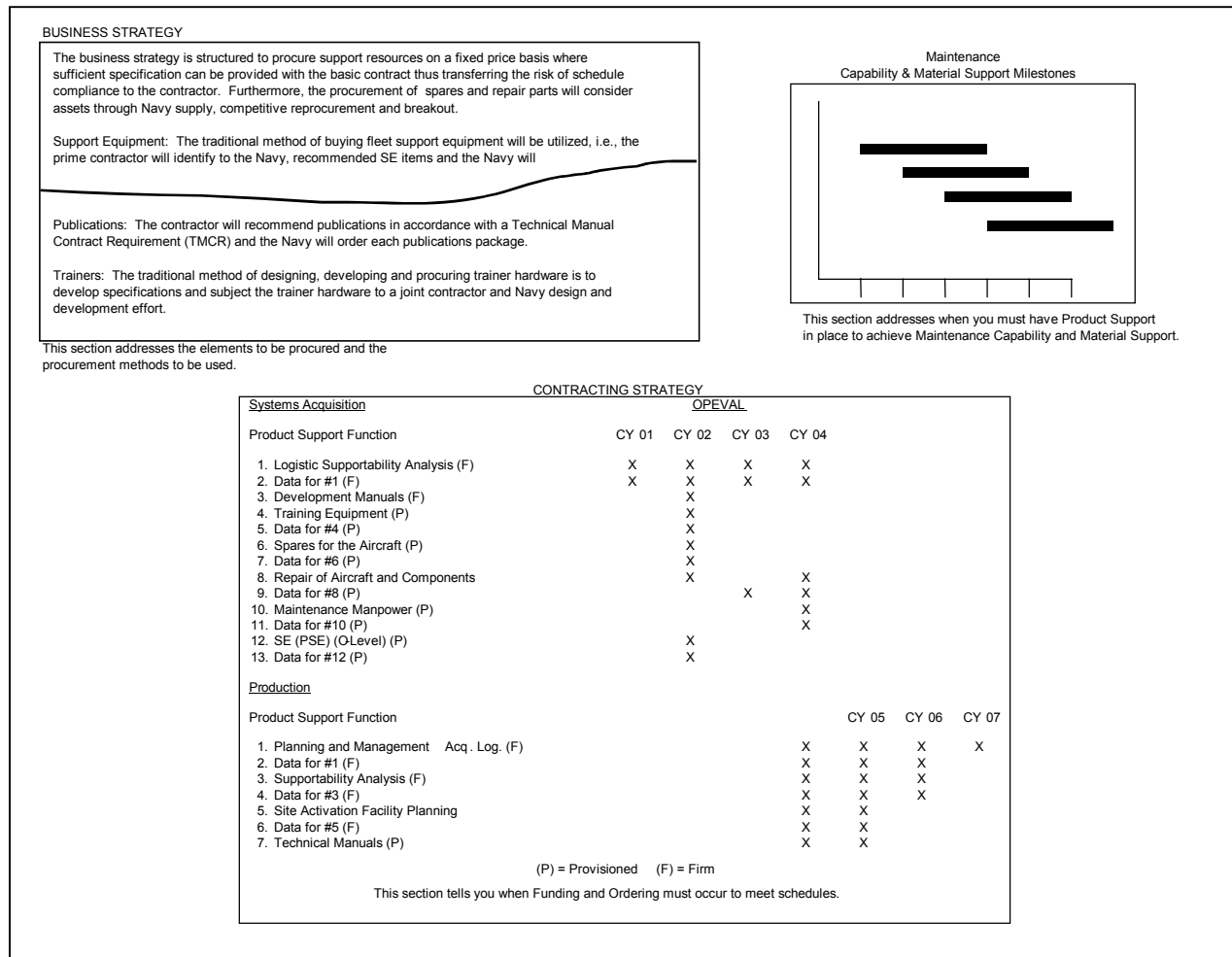


FIGURE E-4-9 Developing Product Support contract Requirements

**ISSUING ORDERS:**

When the System Integration and later the System Demonstration contracts are compared to the ALSP, consideration is given to the contracting strategy. One aspect of this consideration involves determining the degree to which provisioned or order clause line items would be used. If the strategy called for their use, then it is likely that during System Demonstration the APML or the LEM will exercise order clause line items. For example, Figure E-4-11 illustrates a line item, 0003, "Repair of GFE" that is an order clause line item (the reference to section H signifies it is probably an order clause line item, even though provisioned line items can be used). Order clause and Provisioned Line Items use should be minimized due to the emphasis on firm fixed priced procurements as well as the administrative delays associated with provisioned orders.



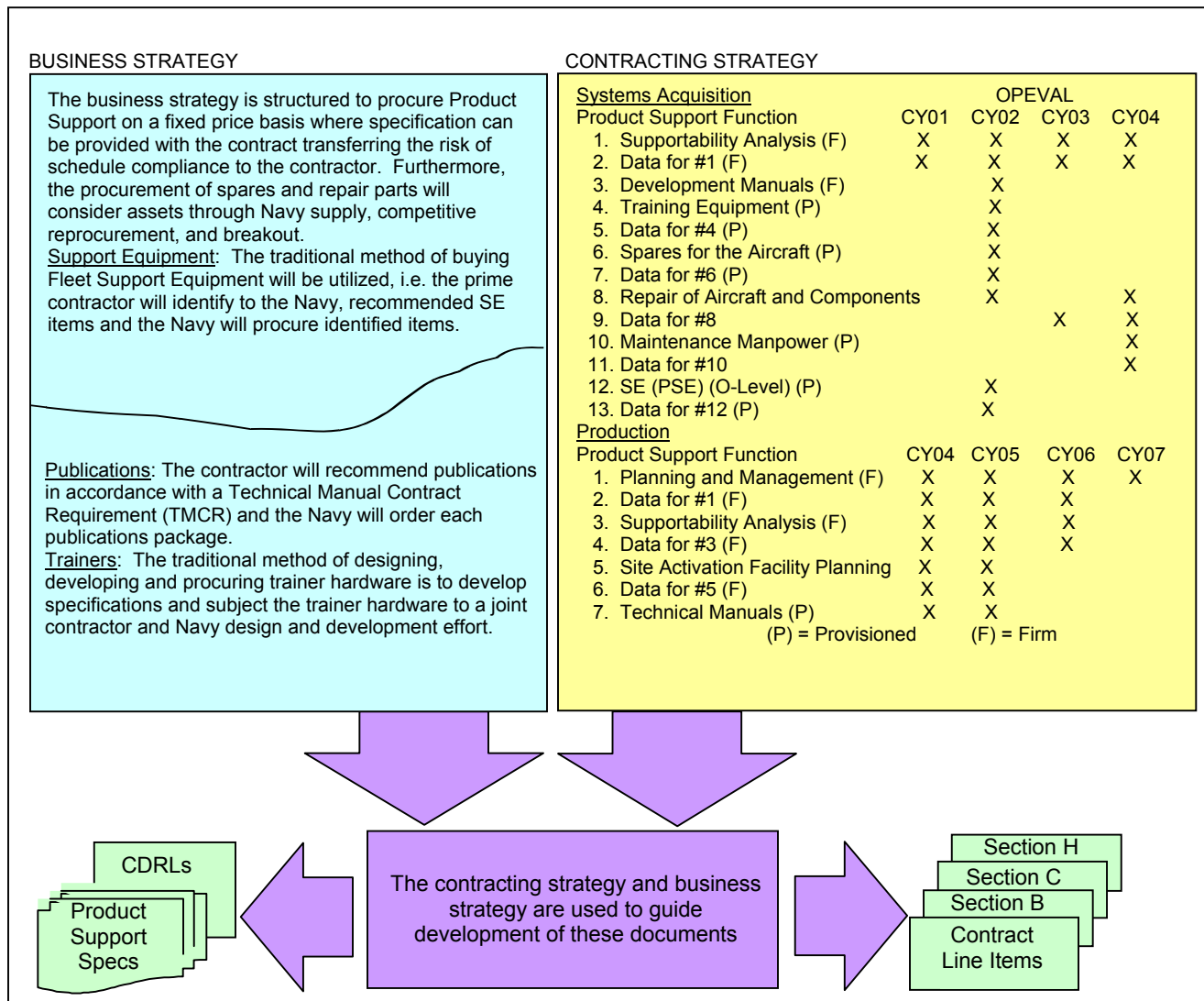


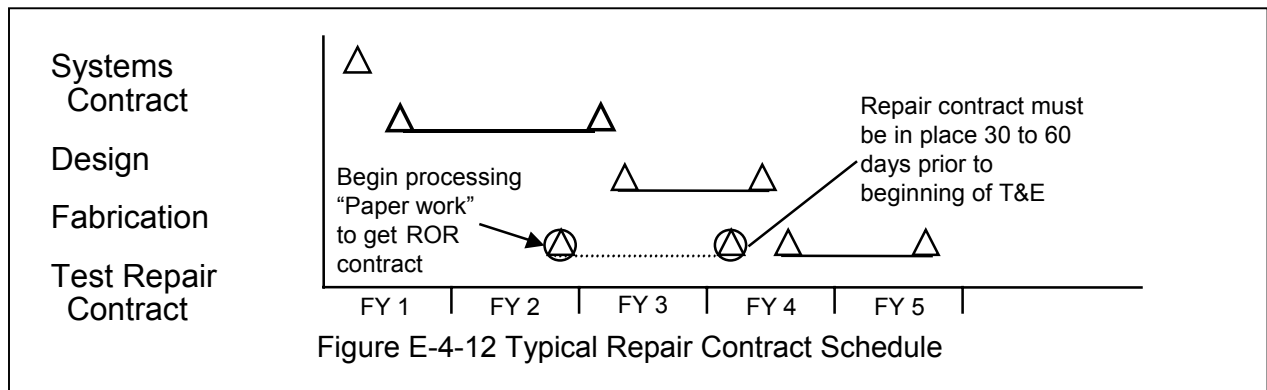
Figure E-4-10.

CLIN	Supplies or Services	Quantity	Unit Price	Total
0001	Spares and Repair Parts	10	\$2,000	\$20,000
0002	Data for 0001	NSP	NSP	NSP
0003	Repair of GFE	(See Section H)		

Figure E-4-11 Section B Supplies And Services

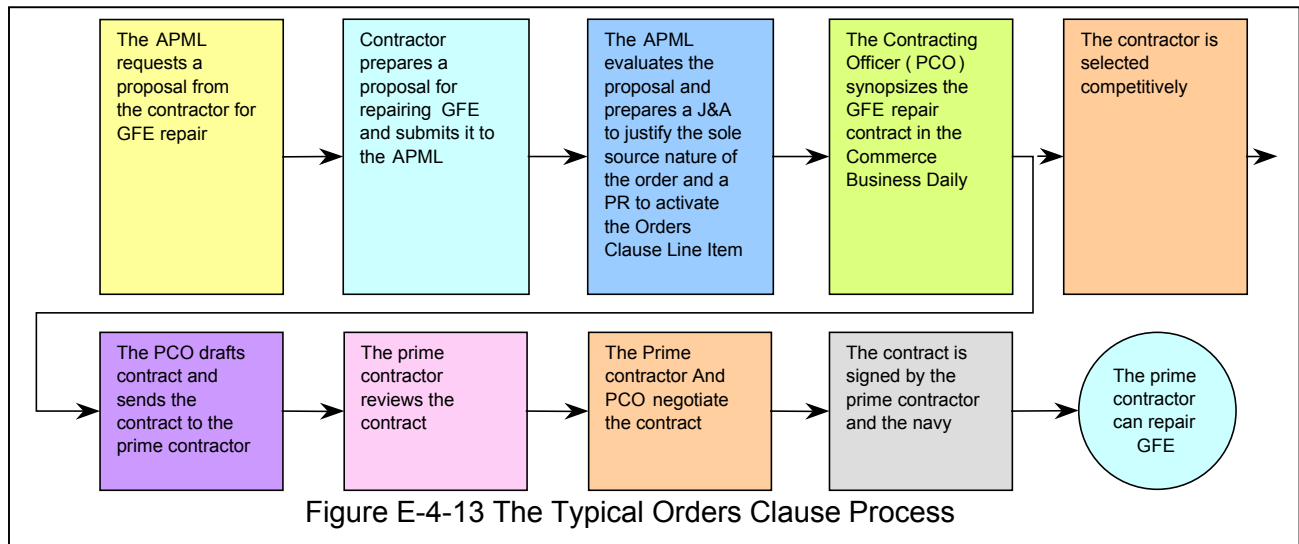
Line item 0003 directs the APML's attention to section H where line item 0003 might read as follows:

"Services to be ordered by the PCO."



This means that the contractor is not going to provide repair of GFE until it is ordered by the PCO. To illustrate how this process would work, assume that line item 0003 is a line item for Repair of GFE during T&E. By reviewing the schedule, Figure E-4-12, the APML determines that a repair contract needs to be in place at least thirty to sixty days prior to the beginning of T&E. The APML also knows that administrative lead times must be considered if the repair contract is to be in place in time to support T&E.

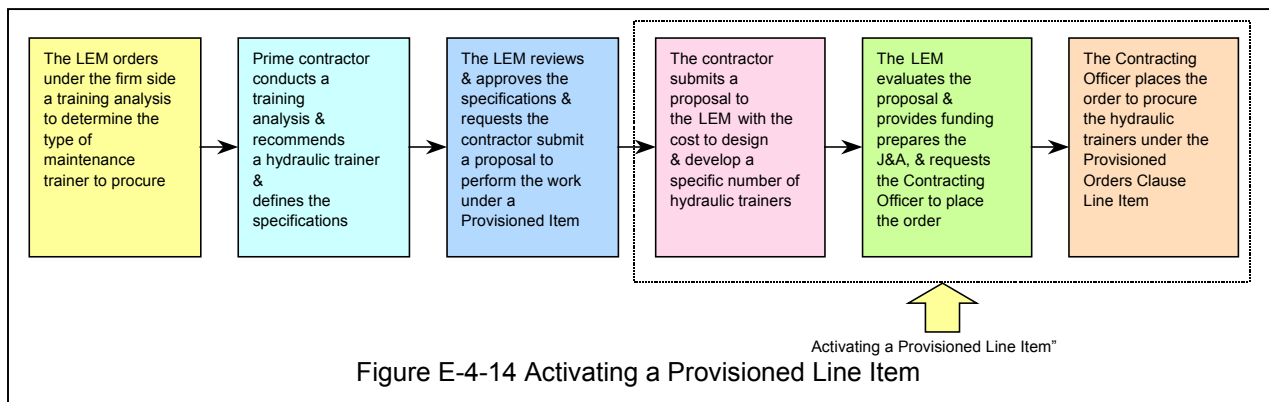
The administrative steps illustrated in Figure E-4-13 are typical steps that are taken to activate an orders clause line item. The eight steps illustrated in Figure E-4-13 can take from (approximately) nine to eighteen months to execute. The APML should begin the process in the last quarter of FY-2 if GFE repair capability is to be in place by the first quarter of FY-4. During System Demonstration the APML should identify milestones for which orders clause line items must be activated. LEMs also use order clause line items. Figure E-4-14 illustrates a typical series of events that the training LEM might experience in ordering maintenance trainers.



The APML should be alert to all APML and LEM requirements for which orders clause activity is necessary. This awareness is necessary to ensure actions are taken with sufficient lead-time to preclude impacts to Maintenance Capability and Material Support.

### UPDATING ALSP:

The ALSP, prepared during Component Advanced Development, addresses System Integration, System Demonstration, LRIP, and Full-Rate Production and Production requirements. If the Business Strategy section of the ALSP called for a System Demonstration contract with Production options, then a substantial amount of Production contract planning was accomplished when the Systems Integration contract was developed. If Production options were not included, then the development of Production line items, Product Support Specifications and CDRLs are required. In either situation, the ALSP is updated based on both changing program factors and the evolving results of Systems Demonstration. Figure E-4-15 illustrates the original milestones in the ALSP and a change to those milestones as a result of a change in Carrier Aircraft (CV) deployment schedules. Also, by this stage of the program, detailed Product Support function schedules and equipment level maintenance capability schedules should be included in the ALSP.



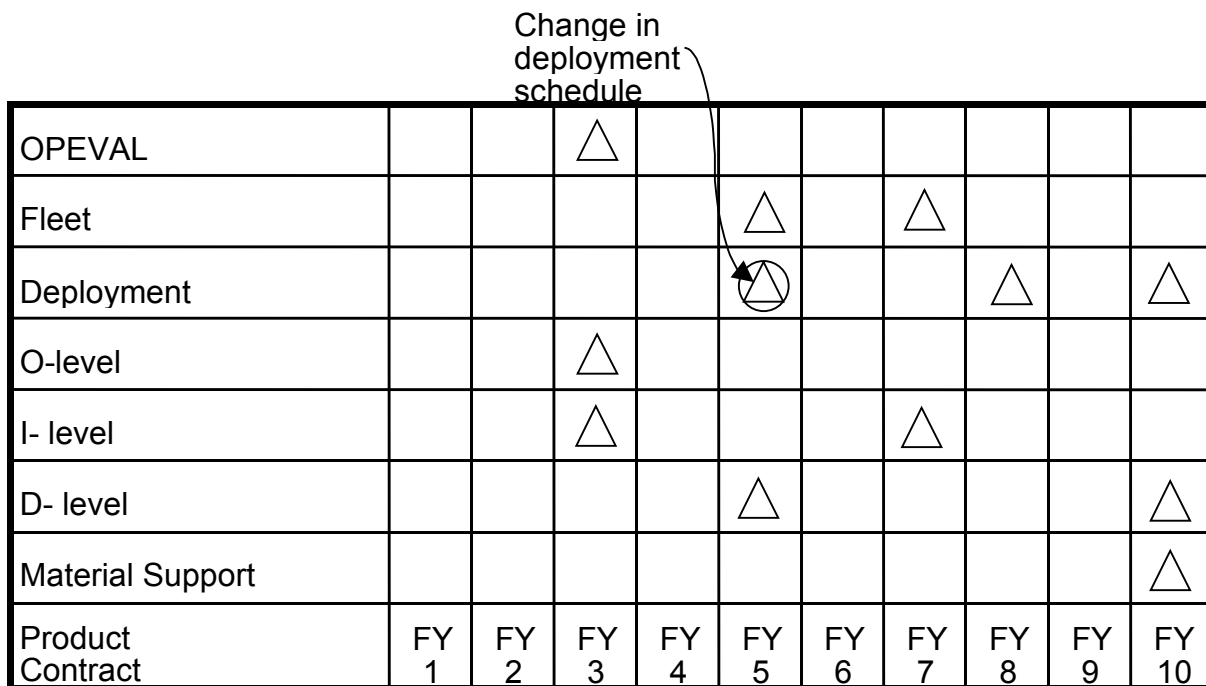


Figure E-4-15 Typical Change from Systems Demonstration to LRIP in Program

This change requires changes in the Product Support planning because the first CV was accelerated three years. This acceleration in CV deployment necessitates changing the following sections of the ALSP:

- The Maintenance Capability and Material Support Milestones section is changed indicating three years of Contractor Maintenance Service (CMS) and Contractor Engineering and Technical Services (CETS) aboard the CV because less I-level capability will be available three years earlier than planned. (The seriousness of this type of change in Product Support planning is emphasized by the requirement to not permit CMS and CETS aboard CVs).
- The Maintenance Concept section is changed to reflect CMS and CETS manpower, increased WRA spares aboard the CV, and the use of interim SE.
- The Business Strategy section is changed to reflect the use of O&M, N repair contract longer than originally planned.
- The Contracting Strategy is changed to add provisioned line items for repair aboard the CV and firm line items for interim Support Equipment and spares for the CV. These adjustments to the contracting strategy are illustrated in Figure 2.48.
- The LRFS would also be changed to increase the APN-1 in FY-3 and FY-4 and O&M, N in FY-4 to procure the interim support equipment, spares, CETS and CMS.

[illegible]

Figure 2.48 Revised Contracting Strategy

### Production Procurement:

If the System Demonstration contract were structured to include production options, the production planning involves preparing modifications to the contract to recognize the changes to the ALSP. For example, the APML would add the Figure E-4-17 line items, CDRLs, and associated Terms and Conditions to the production options.

**Repair of Repairables (ROR) contract:**

- NAVICP system LEM initiates the contract vehicle requirement a lead-time away from the first operational flight.
- This is part of the interim support program that precedes full organic support
- Must be planned together with interim spares because a substantial number of components will be retrograded to the **Original Equipment Manufacture (OEM)**. The OEM usually returns a repaired item in 30 to 90 days compared to 7 to 12 days for an IMA. This increase in turnaround time requires more spare WRAs at the site
- The lead time for ROR contract planning should be approximately 18 months (prior to the first operational flight)
- The contracting for interim spares should occur 18-24 months prior to the first operational flight

- Furthermore, the APML should ensure that for every item of GFE, the appropriate LM has a Production ROR contract that supports the APML's weapon system.

## Section B

Item	Supplies & Services	Quantity	Cost	Total Price
0028	Interim Support Equipment	XXX	\$	\$
0029	Data For 0028			
0030	Interim Spares & Repair Parts	XXX	\$	\$
0031	Data For 0030			
0032	Repair Of CFE	(See Section H)		
0033	Data For 0032	(See Section H)		
0034	CETS		\$	\$
0035	Data For 0034		\$	\$

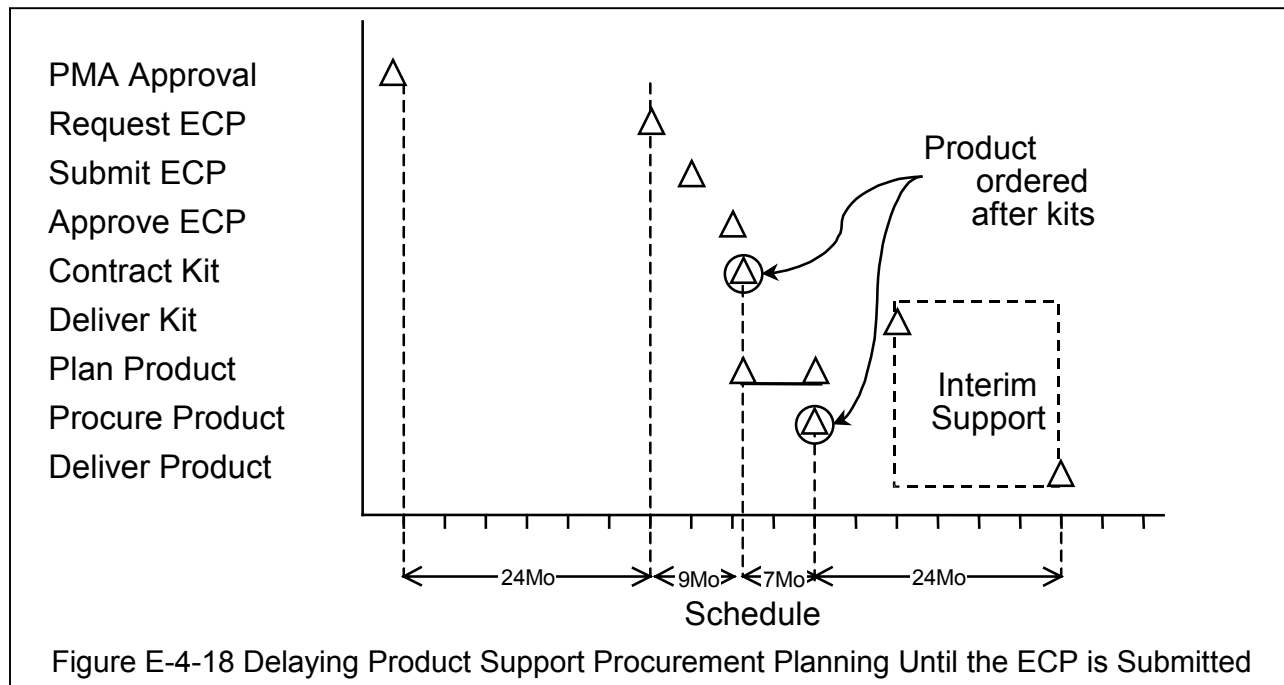
Figure E-4-17 Typical Production Line Item Modifications

### Program Management Proposals (PMPs):

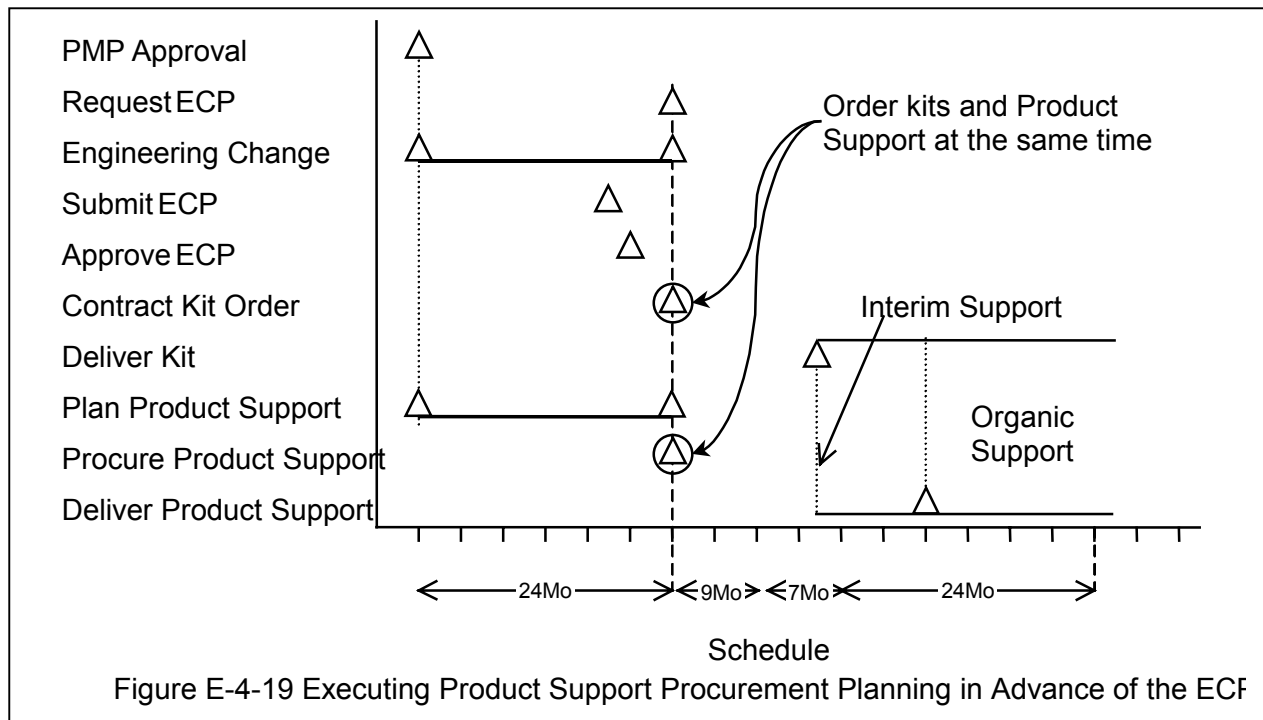
Once a configuration baseline has been established, no changes are made to weapon system without an approved PMP or a subsequent PPBS change. The PMP program was established to control spiraling costs. Initially only selected programs were required to submit PMPs when a threshold was broken. The PMP program has proven to be a valuable tool in managing configuration control and cost, and has been expanded to include all Navy RDT&E, acquisition, and retrofit programs. Thresholds have been eliminated. The intent of PMP control is to prevent unit cost growth and "requirements creep" due to unnecessary configuration changes, adding capabilities to existing systems, or making improvements that entail hidden execution costs. The Resource Sponsor (N-78) must commit to funding the proposed changes in the Sponsor Program Proposal (SPP) for the PMP to be reviewed by the CNO (or Commandant of the Marine Corps (CMC)) and by SECNAV. Changes not funded in the SPP will be canceled. Additionally, the change must begin during one of the first two years of the FYDP. Changes proposed to begin in the out-years should be held until the applicable POM. Traditionally, engineering and Product Support planning and analysis of an engineering change does not begin until the Preliminary ECP is approved. This is usually two years or more from the approval date of the PMP. This two-year hiatus in planning and preparing for the incorporation of the change and its associated Product Support results in the following significant impacts:

- A two year lag in achieving the improved operational capability
- Increased configuration differences in Fleet aircraft
- Increased periods of interim support
- Increased retrofit costs

The PMP process offers an opportunity to reduce the aforementioned impacts significantly. Figure E-4-18 illustrates a typical schedule from the PMP approval through ECP incorporation and support.



It is evident by this figure that the improved operational capability is introduced 48 months after PMP approval with interim contractor support. Conversely, if the orders for the kits and Product Support are placed concurrently with the beginning of the fiscal year, the improved operational capability could be achieved eight months earlier, the interim support period could be reduced, and organic support achieved earlier.



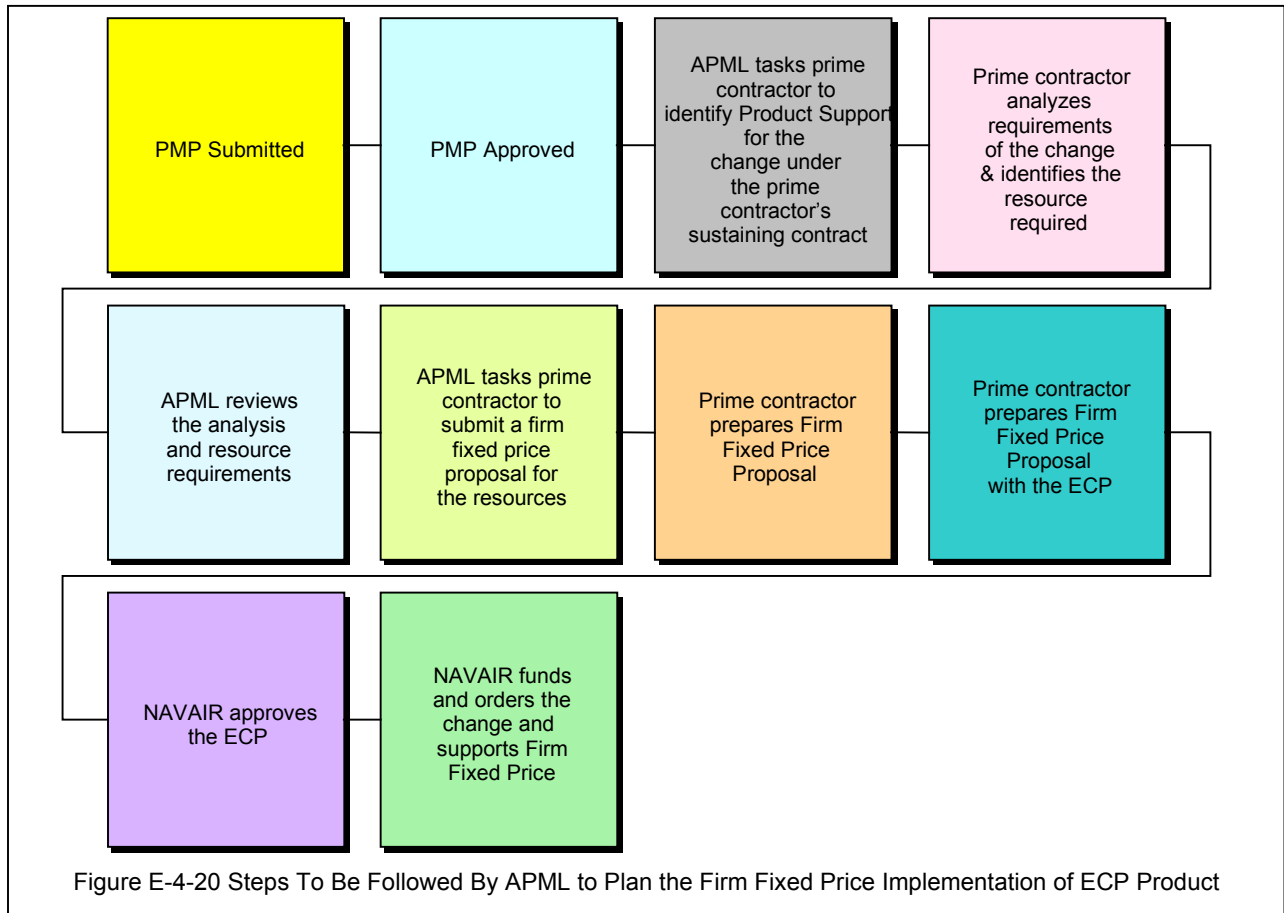
This better approach is illustrated in Figure E-4-19.

For the APML to pursue the "advanced planning" approach specific initiatives are required. These initiatives must be supported by the Class Desk and PMA and sponsored financially by the PMA. Consequently, the APML must develop a plan of action that contains the following salient features and obtain support and approval of the plan from the PMA:

- The production contract must contain funded line items for sustaining engineering effort and a Statement of Work that identifies the requirement for conducting the requisite engineering of PMP approved changes and the preparation and submittal of the ECPs in the fiscal year in which it will be funded.
- The production contract must contain a Product Support Modification Management contract line item and a Statement of Work that requires the analysis, identification, and pricing of the Product Support for PMP approved changes. Also the Statement of Work must require the development of the Product Support sections of the ECP so that the submittal of the ECP includes firm priced Product Support.
- The management structure of the program should be revised to include Configuration Management Reviews during which the status of Advanced ECP Procurement Planning is reviewed to ensure timely submittal of ECPs concurrently with the availability of funding.
- PMPs must be identified for which advanced planning will be conducted.



The specific steps that an APML should follow once the contract is structured to allow the advanced planning for ECPs involves the PMA, the Class Desk, and the APML collectively selecting the PMPs for which advanced engineering and Product Support S Analysis following the steps identified in Figure E-4-20.



## COMPETITION PLANNING

- Consideration given to determining the most cost-effective method of procuring product support resources
  - *Breakout*: A procurement practice of taking items from the prime contractor and procuring the items directly from the prime contractor's vendors.
  - *Competition*: A process of selecting from several sources, a company to produce a product for the government
- Both alternatives are considered by the APML when planning the procurement of product support

## PROCUREMENT INITIATION DOCUMENT (PID)

To initiate the procurement of a requirement a PID must be initiated. The PID process is a team approach for the streamlined development, review, and approval of

procurement documentation. The scope of the procurement requirement will determine the resources necessary to initiate and execute the PID.

The approved Procurement Initiation Document (PID) process, flow charts, and responsibilities are outlined in NAVAIRINST 4200.37A dated 5 July 2000 (see links and references below). For additional NAVAIR procurement process information see the NAVAIR Team Acquisition Guide, link provided below.

#### **ALPHA ACQUISITION** (also known as Alpha Contracting)

This preferred procurement contracting approach is done concurrently versus serially and involves the integration of the Program/ project/ Acquisition Manager, Contracting Officer, Contractor, Defense Contract Audit Agency (DCAA), Defense Contract Management Command, various field activities and AIR-4.2 cost analysis members into a cohesive team. Advantages include;

- Reduced procurement lead times
- Reduced cost

The Alpha Acquisition method is referenced in the NAVAIR, AIR-1.1 Team Acquisition Guide at the link provided below. For specific information contact NAVAIR contracts, AIR 2.1 at 301-757-7853.

#### **APML ROLE –**

- Establish the ALSP as the product support strategy and procurement basis to support the requirements generated from the maintenance planning effort.
- Ensure LRFS reflects approved support requirements budget, funding and need timeframe
- Initiate procurements within the prescribed PM process (requirement, funding and schedule)
- Generate procurement documents (SOW, SOO, PID)
- Participate in required PPC
- Initiate funding documents
- Participate in negotiation process
- Execute contract requirements
- Track deliverables

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-1.1.1	NAVAIR Acquisition Policy	NAVAIR HQ	(301) 757-6623

**REF –**

- NAVAIRINST 4200.37A The Procurement Initiation Document Process
- NAVAIR Team Acquisition Guide

**LINKS –**

[AIR-1.1.1 NAVAIR Team Acquisition Guide \(15th Edition\) April 2000](#)

Chapter VIII: Procurement Process (Discretionary)

<http://www.abm.rda.hq.navy.mil/>

The Procurement Initiation Document (PID) Process Source Selection

[Execution of Funds: The Comptroller's Role In Program Execution](#)

[Planning, Programming and Budgeting System \(PPBS\)](#)

<https://www.nalda.navy.mil/documentation.html>

Logistics Tool Box

<http://deskbook.dau.mil/data/004EA001DOC.DOC>

SD-15 Performance Specification Guide

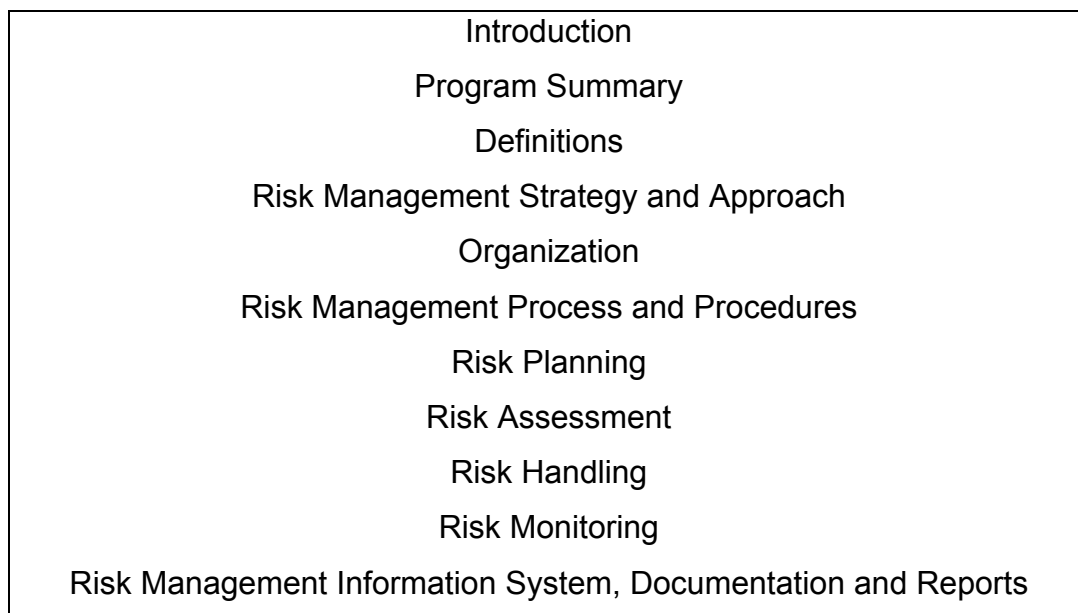
## E-5 - RISK MANAGEMENT

**WHO** – NAVAIR, PM, APML, APMSE, PCO, IPTs, Prime Contractor

**WHAT** – Risk is a measure of the potential inability to achieve overall program objectives within defined cost, schedule, and technical constraints and has two components:

- (1) The *probability/likelihood* of failing to achieve a particular outcome
- (2) The *consequences/impacts* of failing to achieve that outcome

Risk plans will vary based on program direction and IPT influence. A typical program risk plan structure is provided in the figure below. The initial sections contain the specific program information and definition. The remaining elements and their description are provided under the “HOW” explanation below.



**WHY** – Required by DEPSECDEF Memo dtd 30 October 2002. Risk mitigation helps reduce system-level risk to acceptable levels by the interim progress review preceding system demonstration and by Milestone C.

**WHEN** – Risk management is initially formalized during a program’s Concept Exploration Phase and updated for each subsequent program phase.

**WHERE** – NAVAIR, Prime Contractor

## HOW –

**Risk events:** Things that could go wrong for a program or system, are elements of an acquisition program that should be assessed to determine the level of risk. The events should be defined to a level that an individual can comprehend the potential impact and its causes. For example, a potential risk event for a turbine engine could be turbine blade vibration. There could be a series of potential risk events that should be selected, examined, and assessed by subject-matter experts.

The relationship between the two components of risk -- probability and consequence/impact -- is complex. To avoid obscuring the results of an assessment, the risk associated with an event should be characterized in terms of its two components. As part of the assessment there is also a need for backup documentation containing the supporting data and assessment rationale.

**Risk management:** is the act or practice of dealing with risk. It includes planning for risk, assessing (identifying and analyzing) risk areas, developing risk-handling options, monitoring risks to determine how risks have changed, and documenting the overall risk management program.

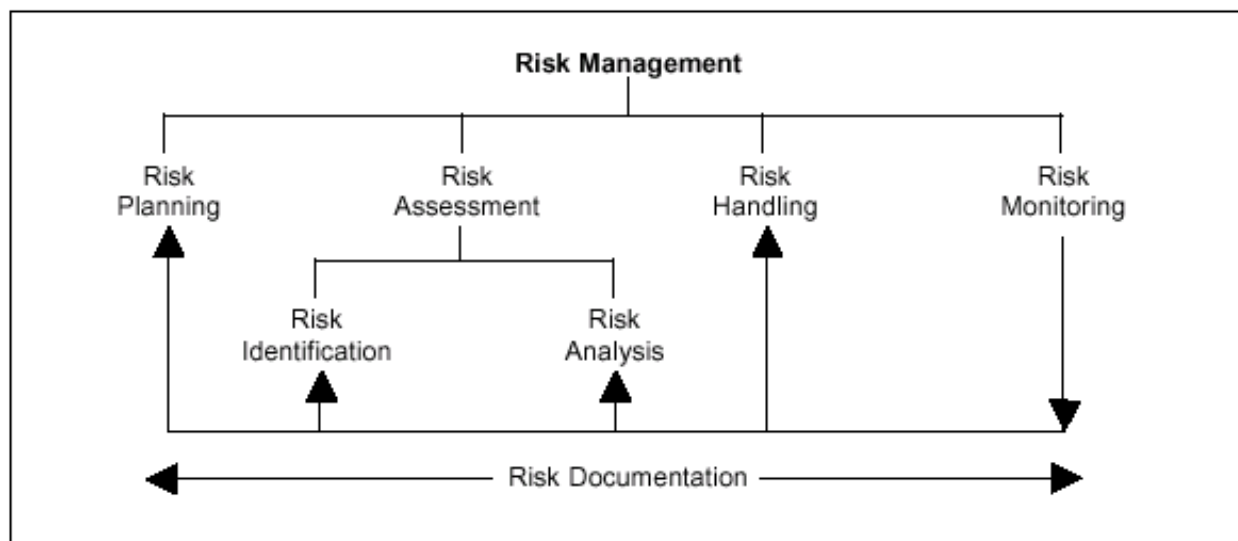


Figure E-5-1. Risk Management Structure

**Risk assessment:** is the process of identifying and analyzing program areas and critical technical process risks to increase the probability/likelihood of meeting cost, schedule, and performance objectives.

- *Risk identification* is the process of examining the program areas and each critical technical process to identify and document the associated risk.

- *Risk analysis* is the process of examining each identified risk area or process to refine the description of the risk, isolating the cause, and determining the effects. It includes risk rating and prioritization in which risk events are defined in terms of their probability of occurrence, severity of consequence/impact, and relationship to other risk areas or processes.

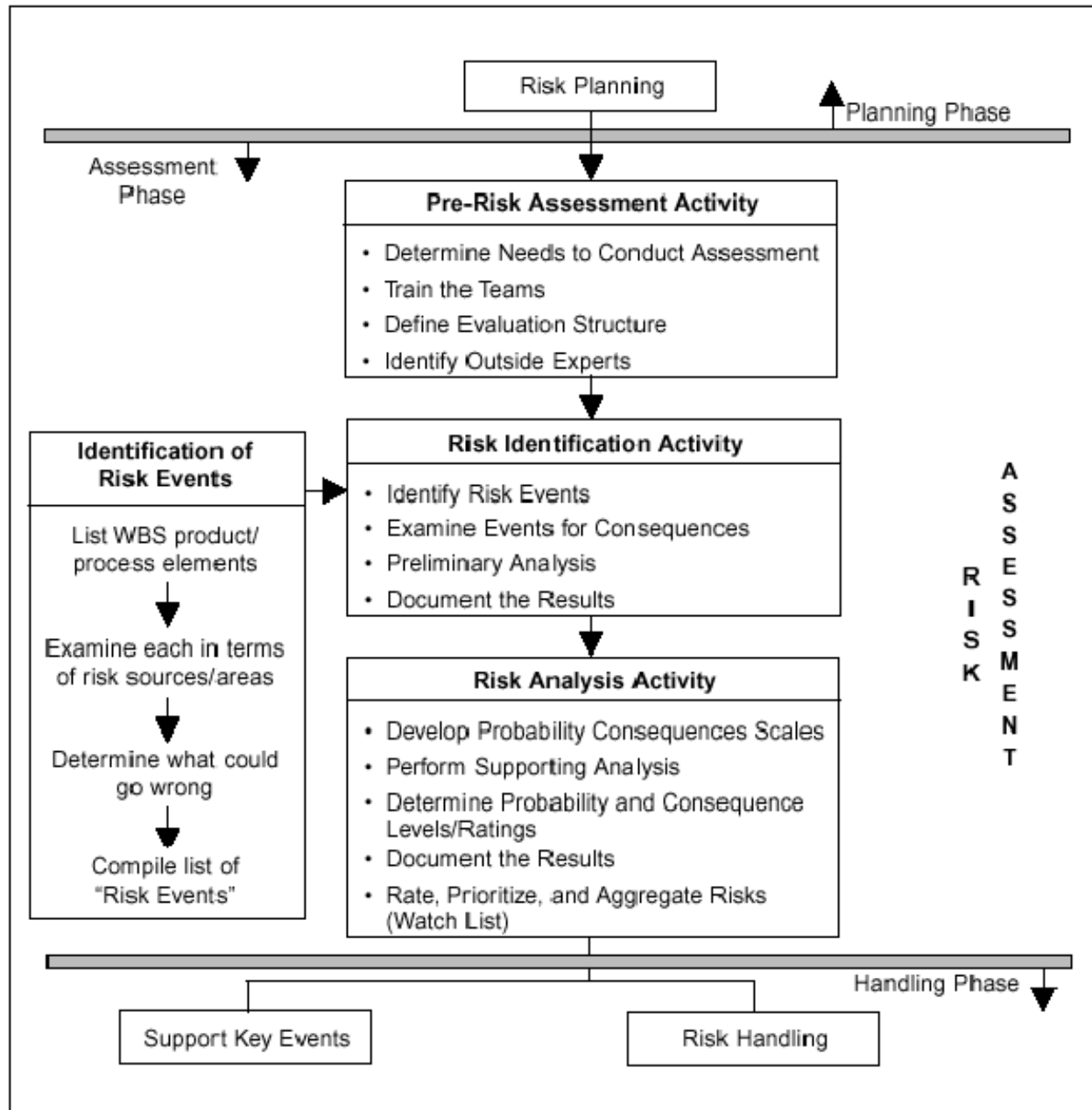


Figure E-5-2 Risk Assessment

**Risk handling:** The process that identifies, evaluates, selects, and implements options, in order to set risk at acceptable levels, given program constraints and objectives. This includes the specifics on what should be done, when it should be accomplished, who is responsible, and associated cost and schedule. The most appropriate strategy is selected from these handling options. For purposes of the *Guide*, risk handling is an all-encompassing term whereas risk mitigation is one subset of risk handling.

**Risk monitoring:** is the process that systematically tracks and evaluates the performance of risk-handling actions against established metrics throughout the acquisition process and develops further risk-handling options, as appropriate. It feeds information back into the other risk management activities of planning, assessment, and handling as shown in Figure E-5-1.

**Following are some typical risk areas:**

- **Threat.** The sensitivity of the program to uncertainty in the threat description, the degree to which the system design would have to change if the threat's parameters change, or the vulnerability of the program to foreign intelligence collection efforts (sensitivity to threat countermeasure).
- **Requirements.** The sensitivity of the program to uncertainty in the system description and requirements except for those caused by threat uncertainty.
- **Design.** The ability of the system configuration to achieve the program's engineering objectives based on the available technology, design tools, design maturity, etc.
- **Test and Evaluation (T&E).** The adequacy and capability of the T&E program to assess attainment of significant performance specifications and determine whether the systems are operationally effective and suitable.
- **Modeling and Simulation (M&S).** The adequacy and capability of M&S to support all phases of a program using verified, valid, and accredited M&S tools.
- **Technology.** The degree to which the technology proposed for the program has been demonstrated as capable of meeting all of the program's objectives.
- **Logistics.** The ability of the system configuration to achieve the program's logistics objectives based on the system design, maintenance concept, support system design, and availability of support resources.
- **Production.** The ability of the system configuration to achieve the program's production objectives based on the system design, manufacturing processes chosen, and availability of manufacturing resources such as facilities and personnel.

- **Concurrency.** The sensitivity of the program to uncertainty resulting from the combining or overlapping of life-cycle phases or activities.
- **Capability of Developer.** The ability of the developer to design, develop, and manufacture the system. The contractor should have the experience, resources, and knowledge to produce the system.
- **Cost/Funding.** The ability of the system to achieve the program's life-cycle cost objectives. This includes the effects of budget and affordability decisions and the effects of inherent errors in the cost estimating technique(s) used (given that the technical requirements were properly defined).
- **Management.** The degree in which program plans and strategies exist and are realistic and consistent. The Government's acquisition team should be qualified and sufficiently staffed to manage the program.
- **Schedule.** The adequacy of the time allocated for performing the defined tasks, e.g., developmental, production, etc. This factor includes the effects of programmatic schedule decisions, the inherent errors in the schedule estimating technique used, and external physical constraints.

#### **APML ROLE –**

- Establish risk management requirements and critical risk areas.
- Awareness of the NAVAIR instructions for Risk Management and Systems Engineering Technical Reviews for risk management requirements for system programs.
- Identify IPT member or supportability POC for risk management board participation.
- Aggressively pursue risk item elimination or risk reduction solution.
- Develop risk reporting mechanisms for supportability risks (i.e. Logistics Risk Cube attached below.)
- The Risk cube has become a standard in metrics briefs and reviews to upper management, usually by the PMA or IPT lead. The APML or ILS IPT lead for the program or product team will develop the elements of the chart and may be asked to defend or present the message.



**POC** – PM IPT (Risk Coordinator)

**REF –**

DSMC Risk Management Guide for DoD Acquisition, (Fourth Edition) February 2001

NAVAIRINST XXXX, Risk Management Instruction “DRAFT”

NAVAIRINST XXXX, Systems Engineering Technical Reviews “DRAFT”

**LINK –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://web2.deskbook.osd.mil/query/search.jsp?SearchText=Risk+Management&Submit=Search>

<https://directives.navair.navy.mil>

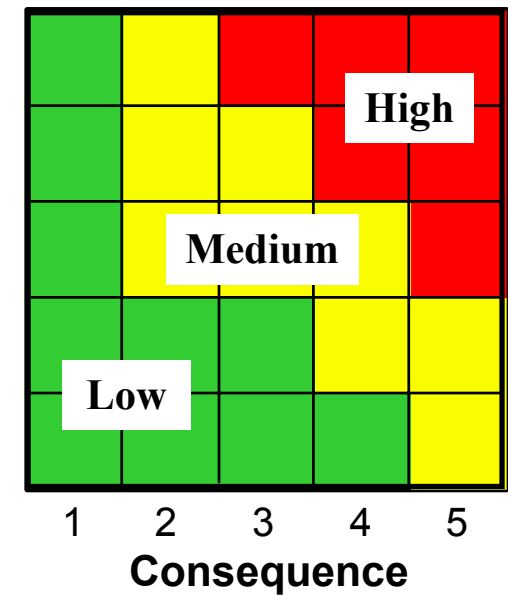
Instructions and Notices

<https://wingspan.navair.navy.mil>

### Analysis of Risk Severity

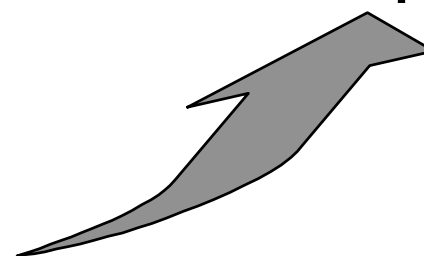
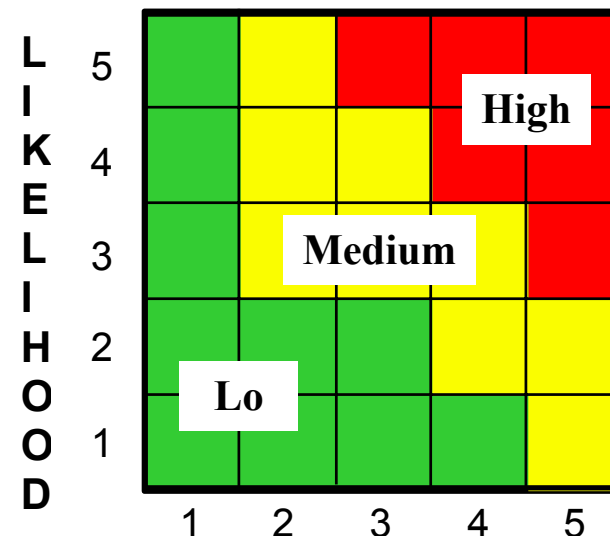
What Is the Likelihood the Risk Will Happen?		
Level		Your Approach and
5	Near Certainty	...Cannot mitigate this type of risk; no known processes or workarounds are available
4	Highly Likely	...Cannot mitigate this risk, but a different approach might
3	Likely	...May mitigate this risk, but workarounds will be required
2	Low Likely	...Have usually mitigated this type of risk with minimal oversight in similar cases
1	Not Likely	...Will effectively avoid or mitigate this risk based on standard practices

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## Analysis of Risk Severity

Given the risk is realized, what would be the magnitude of the impact?			
Level	Performance	Schedule	Cost
1	Minimal or no impact	Minimum or no impact	Minimal or no impact
2	Minor perf shortfall, same approach retained	Additional activities required, able to meet key dates	Budget increase or unit production cost increase <1%
3	Moderate perf shortfall, workarounds available	Minor schedule slip	Budget increase or unit production cost increase <5%
4	Unacceptable, workarounds available	Program critical path affected	Budget increase or unit production cost increase <10%
5	Unacceptable, no alternatives	Cannot achieve key program milestone	Budget increase or unit production cost increase >10%



## E-6 - WARRANTIES

**WHO** – PM, APML, PCO

**WHAT** – A warranty is a promise or affirmation given by a contractor to the government regarding the natures, usefulness, or condition of the supplies or the performance of services furnished under the contract.

**WHY** – The principal purposes of a warranty in a government contract are:

- To delineate the rights and obligations of the contractor and the government for defective items and services
- Generally, a warranty should provide:
  - A contractual right for the correction of defects notwithstanding any other requirement of the contract pertaining to acceptance of the supplies or services by the government, and
  - A stated period of time or use, or the occurrence of a specified event, after acceptance by the government to assert a contractual right for the correction of defects

DOD 5000. 2R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002), dated 10, June, 2001 states in [C2.9.3.7](#): The PM shall examine the value of warranties on major systems and pursue them when appropriate and cost-effective. If appropriate, the PM shall incorporate warranty requirements into major systems contracts in accordance with FAR Subpart 46.7.

**WHEN** – It is NAVAIR policy to pursue cost effective warranties on all procurements

- Program Managers (PMs) are responsible for the development and inclusion of appropriate warranty provisions in solicitations
- Program Managers should include the expertise of the integrated product team when determining warranty requirements
- Warranty periods must be clearly stated in the solicitation

**WHERE** – NAVAIR

**HOW** – Follow the references and links below on warranty guidelines and policies.

### APML ROLE-

- When a warranty is used on a program, ensure that all acquisition plans (specifically ALSP) address the planned use of warranties and their associated impact on fleet user maintenance operations and the Navy's logistics support system.
- Ensure that established methods are employed to identify all warranted items, including marking both warranted material and shipping containers as appropriate

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E		NAVAIR HQ	(301) 757-8233

**REF -**

DoD 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002)

DFARS 246.7 Defense Federal Acquisition Supplement, Subpart 246.7 - Warranties

MIL-PRF-49506 Performance Specification Logistics Management Information

NAVAIRINST 13070.7 Policy Guidance for Warranty Application on NAVAIRSYSCOM Weapon System Procurements

SECNAVINST 4330.17 Navy Policy on Use of Warranties

For more detailed information on this topic refer to:

- NAVAIR *Procurement Initiation Document (PID) Guide*
- NAVAIR *Warranty Guide*
- Joint Aeronautical Commanders Group *Flexible Sustainment Guide* and
- Defense Systems Management College, *Warranty Guidebook*
- NAVAIR Contracting for Supportability Guide, Chapter 16

**LINKS –**

<http://dod5000.dau.mil/>

DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6.1/warranty.html>

Logistics Tool Box

<http://web1.deskbook.osd.mil/default.asp>

go to search, enter warranties, follow links.

<http://www.acq.osd.mil/dp/dars/dptltr/98002.pdf>

# **APPENDIX F**

## **CONFIGURATION MANAGEMENT**

### **Table of Contents**

F-1 - CONFIGURATION MANAGEMENT (CM)

F-2 - CONFIGURATION MANAGEMENT INFORMATION SYSTEM (CMIS)

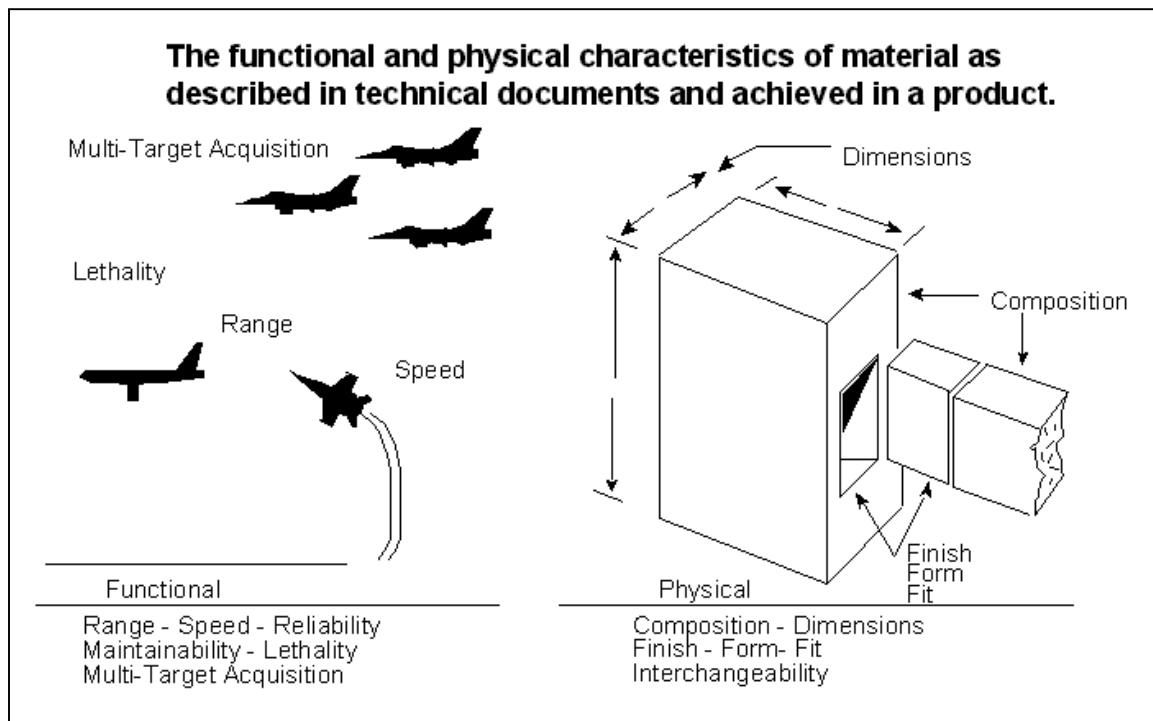
F-3 – TECHNICAL DIRECTIVES (TDS)/BULLETINS/RED STRIPES

## F-1 - CONFIGURATION MANAGEMENT (CM)

**WHO** – PM, APML, APMSE, IPTs, Fleet, Prime Contractor

**WHAT** – A formal discipline of program management that integrates and applies technical and administrative actions necessary to identify, document, validate and verify, control, report and record the functional and physical characteristics of a product or item throughout its life cycle. (NACMED II)

“Configuration Management is the process for establishing and maintaining consistency of a product’s performance, functional and physical attributes with its requirements, design and operational information throughout its life”



**WHY** – DOD Regulation 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002) states the requirement for a configuration management process to control the system products, processes and related documentation.

### **Objectives of Configuration Management**

- Provide physical and functional characteristics that are:
  - Determined during design and development
  - Maintained throughout the life cycle
  - Supportable during production, fielding/deployment, and operational support
  - Controlled at affordable life cycle cost
- Concentrate on supportability interrelationships including;
  - Specifications, engineering drawings, logic diagrams, and program description documents
  - Standardization and compatibility maintained
  - Control system, equipment, and computer program interfaces
  - Maintain current configuration status by configuration item

### **Configuration Management Concept**

- Defined and documented requirements
    - Technical traceability
      - Identification by configuration item
      - Monitored by reviews
      - Verified by audits
    - Change control to configuration identification
    - Status accounting of configuration item is maintained
    - Reproducibility of technical items and test results
- Formalized engineering & configuration management process
- Cost Performance Supportability

### **CM Benefits**

- Technical Data Package
- Test and quality control
- Interface control
  - Hardware to software Configuration Item's (CI's)
  - System CI's to associated CI's
- Other technical issues
  - Lot control
  - Effectivity
  - Workload
  - Budgeting
  - Planning



### Supportability (S) CM Benefits

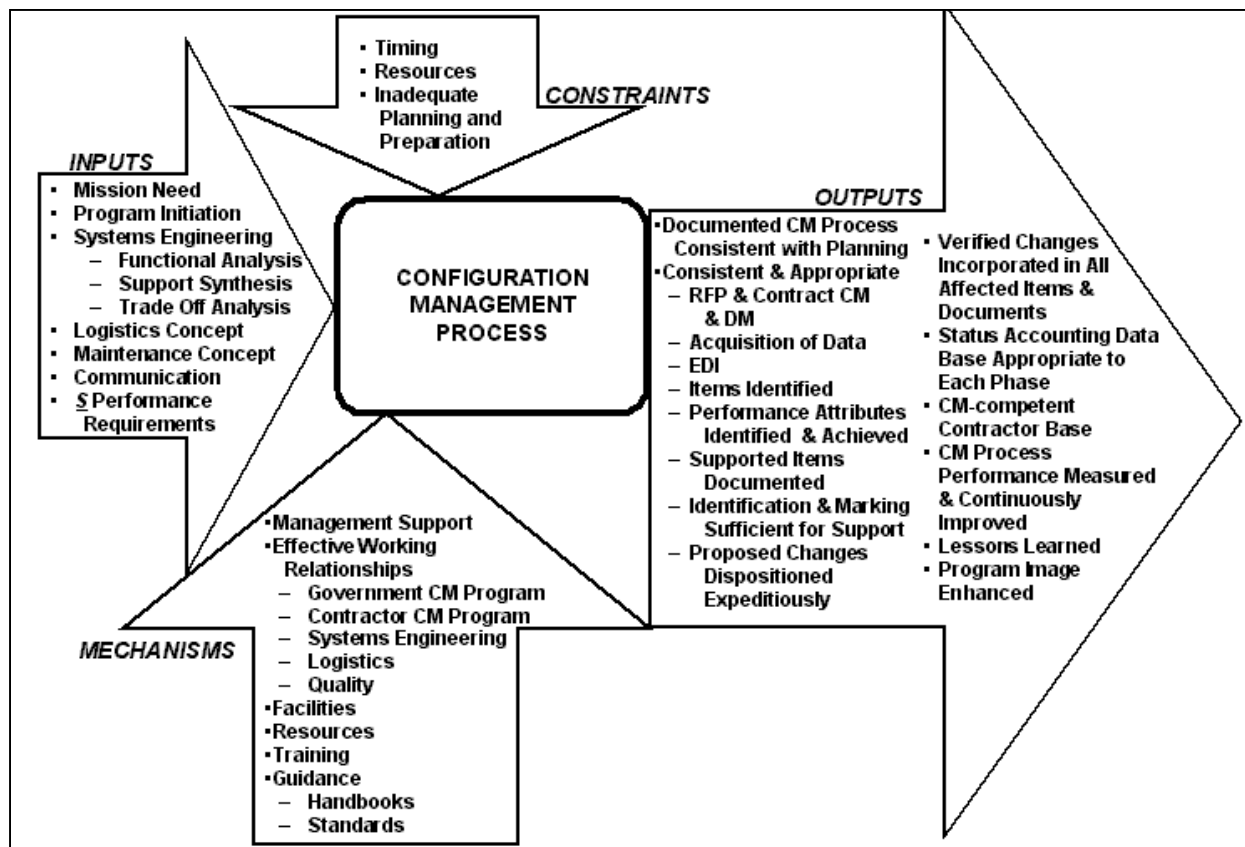
- Maintenance Planning Manpower and Personnel
- Design Interface
- Training
- Spares and Repair Parts
- Tech Data
- Tools & Test Equipment
- Computer Resources
- Facilities
- PHS&T
- Outfitting
- Reprocurement
- S Performance Requirements
- Readiness

**WHEN** – CM is a requirement in each phase of the system life cycle.

**WHERE** –NAVAIR, PM, IPTs, Fleet, Prime Contractors

**HOW** –

### CM Management Process



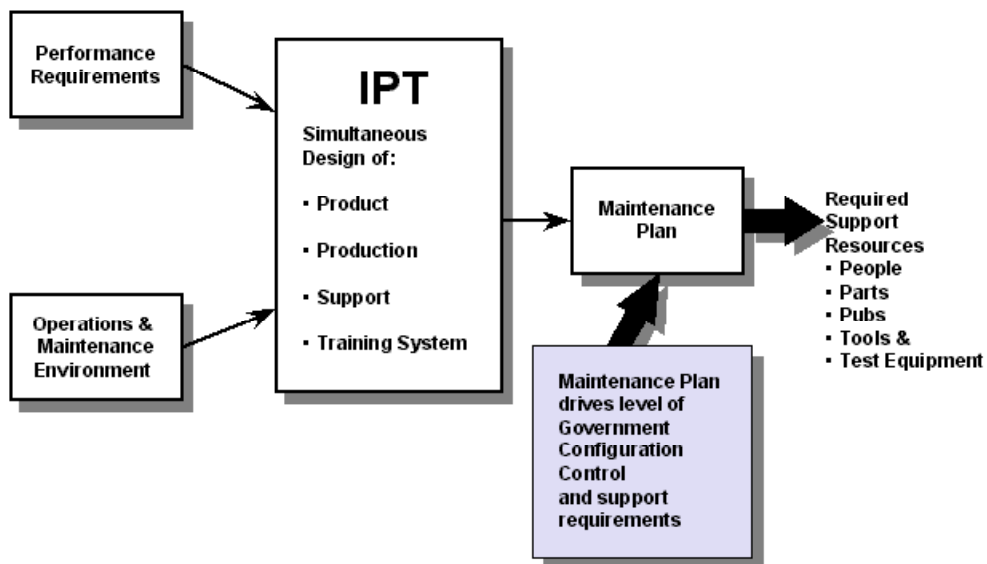
### CM Relationships

## CM Planning Relationships

Milestone

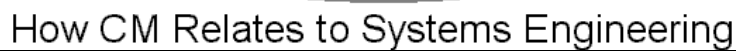
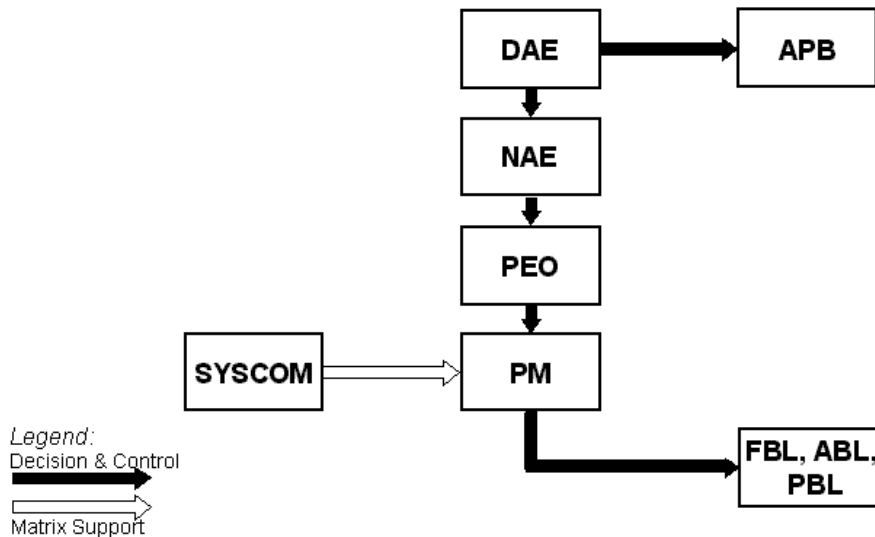


## How CM Relates to Logistics





## ACAT ID EXAMPLE



**CM Specifications & Standards**

- *Cancelled by Acquisition Reform*
- *Cancelled by MIL-STD 973*
- MIL-STD 480, Configuration Control - Changes, Deviations, and Waivers
- MIL-STD 481, Configuration Control - Short Form
- MIL-STD 482, Configuration Status Accounting Data Elements
- MIL-STD 483, Configuration Management Practices
- MIL-STD 1456, Configuration Management Plan
- MIL-STD 1521, Technical Reviews and Audits *Now Approved for Use*
- AMC-STD 2549A, CM Data Interface Standard
- MIL-HDBK 61A, Configuration Management
- EIA/IS-649, National Consensus Standard for CM
- *Management Guidelines*
- ISO 10007, Quality Management - Guidelines for CM

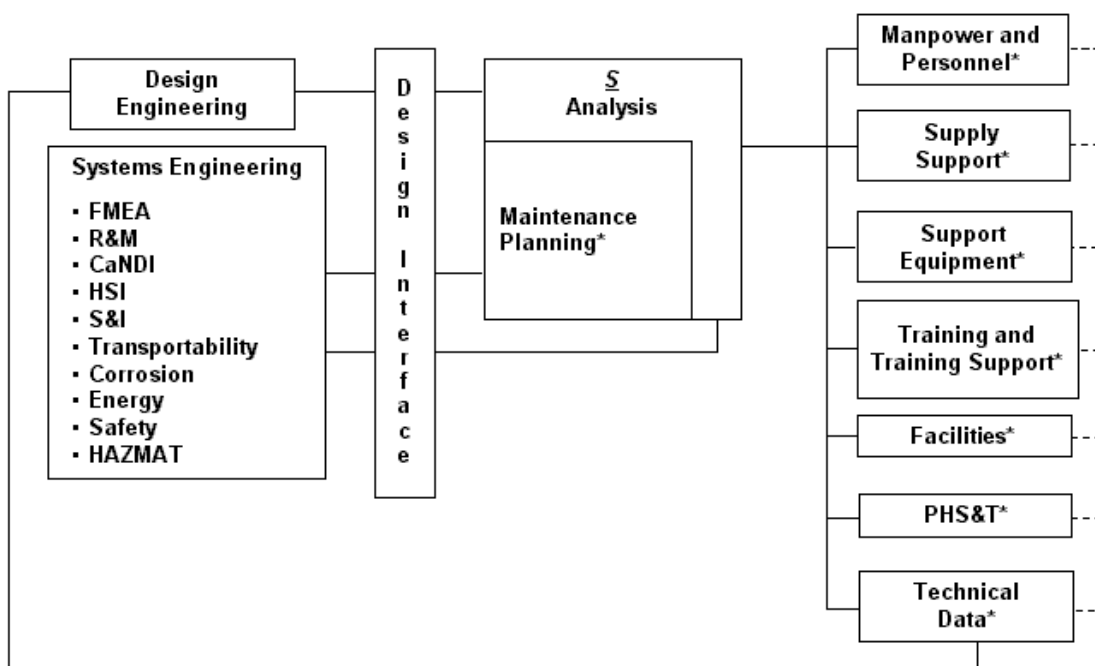
**Consolidation of Specifications and Standards**

- MIL-STD 490B, Specification Practices has been integrated into MIL-STD 961, Military specifications and Associated Documents
- One Multipurpose CM-related DID has been developed.
- DI-SDMP-81493, Program-Unique Specification Documents. This DID documents requirements for:
  - Systems
  - Items
  - Software
  - Processes
  - Materials

### CM Planning

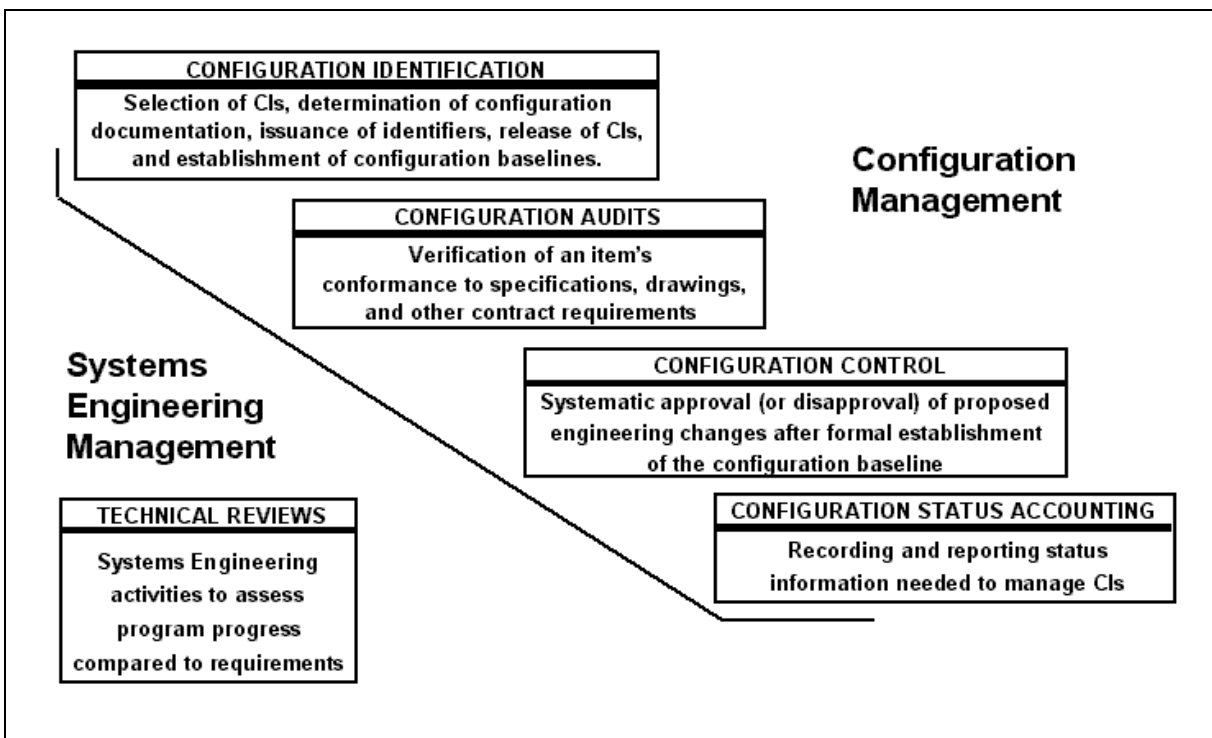
- Section 1, Introduction
- Section 2, Reference documents
- Section 3, Organization
- Section 4, Configuration Management Phasing and Milestones
- Section 5, Data management
- Section 6, Configuration Identification
- Section 7, Interface Management
- Section 8, Configuration Control
- Section 9, Configuration Status Accounting
- Section 10, Configuration Audits
- Section 11, Subcontractor/Vendor Control

### CM planning Interrelationships

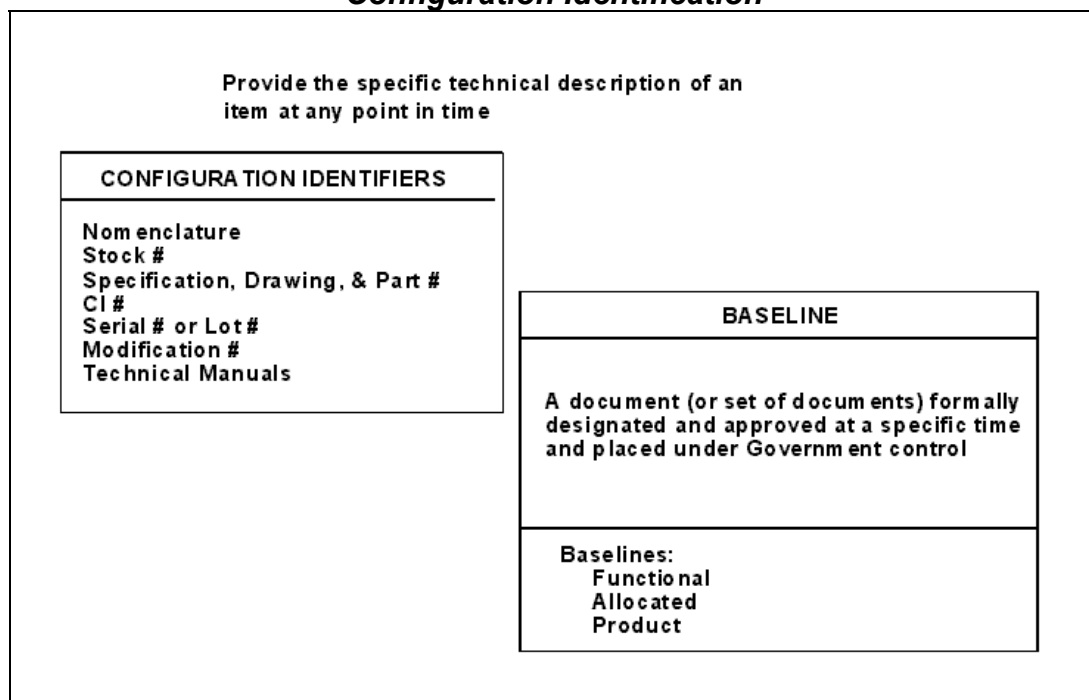


\* Each Acquisition Logistic Support element pertains to the hardware portion of Computer Resources Support as well as to other systems and equipment.

## CM Elements



## Configuration Identification



### Configuration Documentation

- **Configuration Baseline:** A document (or a set of documents) formally designated and approved at a specific time and placed under Government control.
  - **Functional Baseline (FBL)** = Performance requirements of the *System* BL = System Specification + Conceptual Design Drawings Functional Configuration Documentation (FCD) = FBL + ECPs
  - **Allocated Baseline (ABL)** = Performance requirements of components of the system ABL = Item Specification + Development Design Drawing Allocated Configuration Documentation (ACD) = ABL + ECPs
  - **Product Baseline (PBL)** = Performance, material, and process requirements PBL = Item, Material, & Process Specifications + Product Drawings Product Configuration Documentation (PCD) = PBL + ECPs

References: MIL-STD 961, Preparation of Military Specifications and Associated Documents

MIL-STD 973, Configuration Management

MIL-T-31000, Technical Data Package, General Specification For

- **Configuration Item (CI)**
  - Aggregation of hardware (or software) that satisfies a function
  - Directly traceable to the Work Breakdown Structure
  - Required for support and designated for separate procurement
  - Designated by the Government for separate Configuration Management CIs are selected based on support requirements

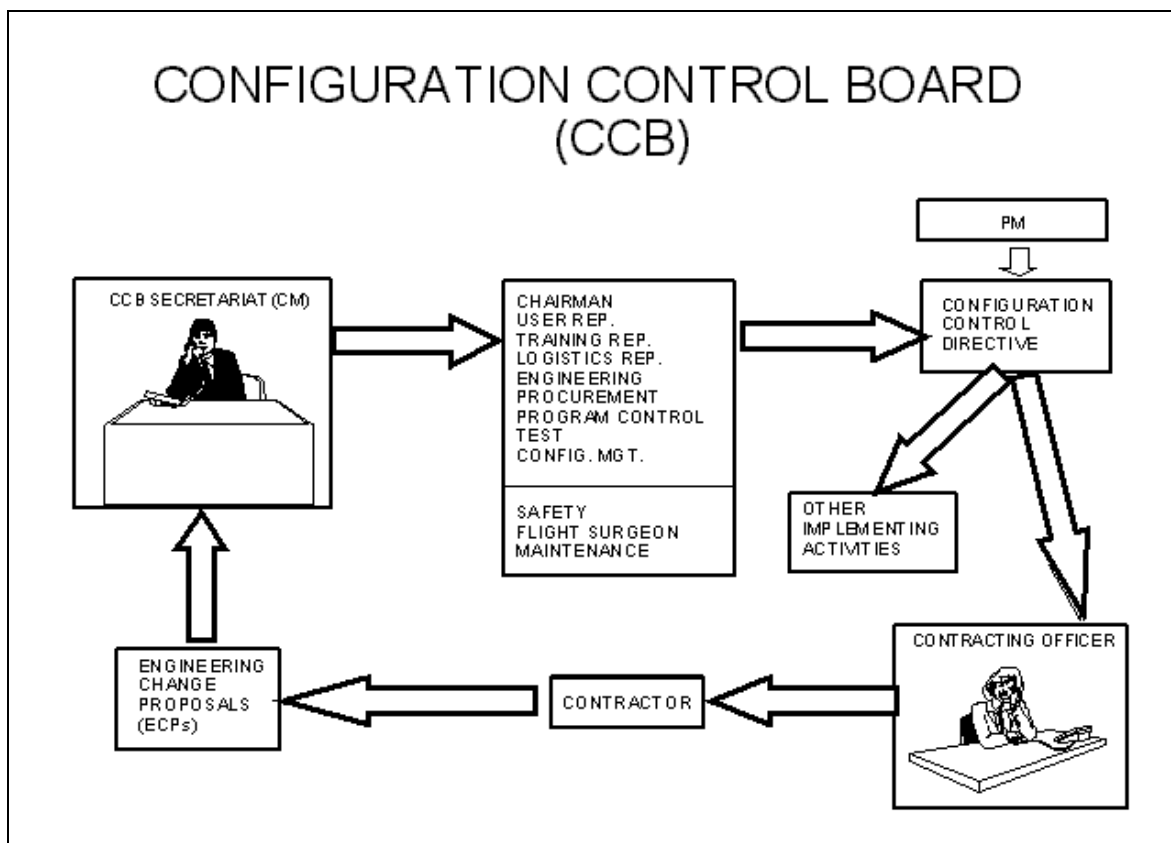
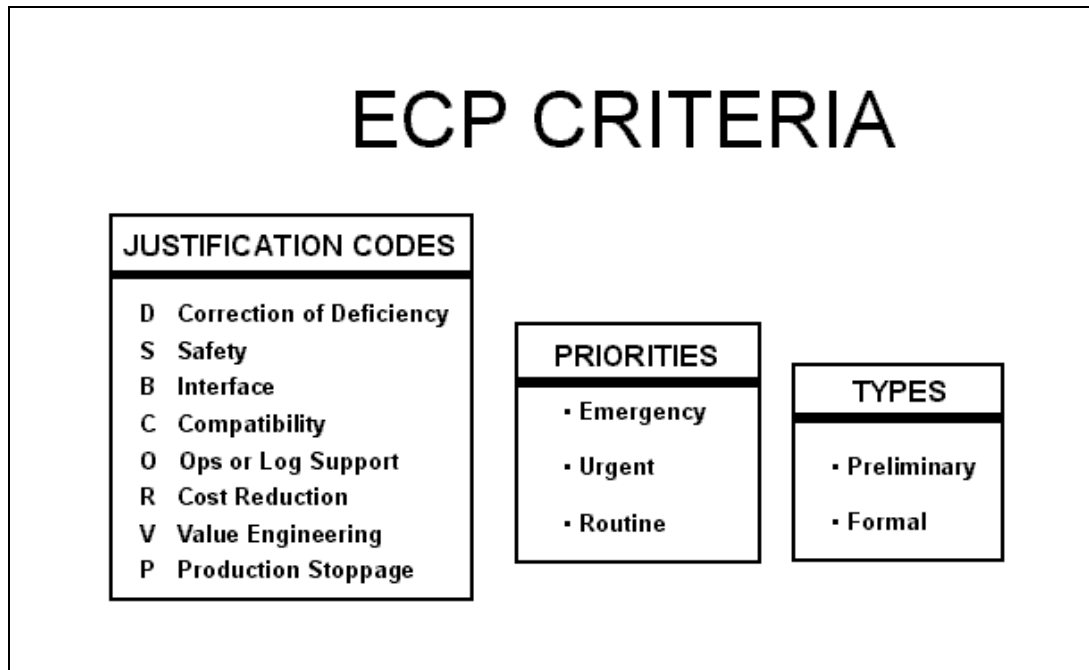
### Configuration Audits

- **Functional Configuration Audit (FCA):** The formal examination of functional (performance) characteristics of a Configuration Item to *verify* that its development has been completed satisfactorily and the item "*as tested*" has achieved the performance (functional) characteristics of the FBL and the ABL.
- **Physical Configuration Audit (PCA):** The formal examination of the "*as-built*" (and "*as coded*") configuration of a Configuration Item against its technical documentation to establish or *verify* the Configuration Item's PBL.

### Configuration Control

- Engineering Change Proposal
- Deviation
- Notice of Revision
- Specification Change Notice
- RAMEC
- Design Change Notice

## Engineering Change Proposal (ECP) Criteria





## Configuration Control Board

The **NAVAIR Change Control Board (CCB)** is established by the Commander to ensure configuration management process discipline by assuring that all aspects of proposed engineering changes are;

- Thoroughly staffed
- Implementation actions identified
- Accomplished in accordance with the CCB directive

A **Decentralized CCB** with documented procedures in a CM Plan and CCB Charter may be established by individual program offices with approval/certification by AIR-1.1.5.

- The approved CCB Charter grants the PM authority to operate a NAVAIR CCB and approve changes.
- The individual PMA assigns the CCB chairperson, certified by AIR-1.1.5
- CCB members are assigned by the charter, certified by AIR-1.1.5

## Configuration Status Accounting

- Current configuration status
- ECP and RFD tracking Kit tracking Status of support, development, and availability. Kit tracking Status of support, development, and availability

Managers
<p><b>Feedback information to;</b></p> <ul style="list-style-type: none"> <li>• <b>Monitor implementation of configuration directives</b></li> <li>• <b>Identify current configuration identification</b></li> <li>• <b>Monitor change status</b></li> <li>• <b>Evaluate effectiveness analysis</b></li> <li>• <b>Review configuration change implementation status reports</b></li> </ul>

Users
<p><b>Historical and present information concerning the configuration, version, and proposed changes to the CI</b></p>

- Navy CSA Data Bases
  - Aircraft
  - MODMIS
  - TDSA
  - Ship
  - SCLSIS
  - FMPMIS
  - Marine Corps Ground Equipment
  - CMIS

### ***Configuration Management Information System (CMIS)***

- CMIS satisfies Army, Navy, Marine Corps, and Air Force requirements for a Configuration Status Accounting (CSA) system.
- Nominated by executive agents as the DoD system for Configuration Management in May 1991.
- Managed by the Joint Logistics Services Center.
- Originally developed for the Military Sealift Command (MSC) in 1990 as the Configuration Logistics Information Program (CLIP).
- Software release of CMIS version 6.0 pending BPR.
- Produces documentation to prepare bid sets for the acquisition process
- Provides desktop capability to track implementation of ECPs.
- Incorporates Multi-User ECP Automated Review System (MEARS)

### **ECP Management**

There are eight significant actions that the APML should support during ECP Management- Receipt, Review, Revision/Change, ECP MAT Preparation, ECP Staffing and Evaluation, CCB Decision, ECP Implementation, and Status Accounting/Monitoring.

The APML's goals are threefold:

1. Decrease the total processing time of an ECP from Receipt to Implementation.
2. Ensure timely and accurate data is entered into Modification Management Information System (MODMIS), Technical Directive Status Accounting (TDSA), and CMIS from Receipt through final TD incorporation.
3. Strive for continuous improvement in the ECP process.

The following discussion is keyed to the steps in Figure F-1-1.

***ECP Processing.*** The APML conducts ECP pre-submission and coordination activities: e.g., need for change, establishment of ECP justification/priority codes, budget and funding issues, OSIP preparation, preliminary ECP evaluation, establishment of ECP submittal schedules, and status tracking. The APML should provide the technical support to successfully complete those steps associated with the eight ECP processing actions.

**Receipt**

It is assumed that ECPs have been submitted to NAVAIR (AIR-1.3.5) for processing. This action includes those steps to record and enter ECP data into the NAVAIR modification database and to forward the ECP to the primary responsibility for processing.

**Step 1. Enter into MODMIS.** AIR-1.3.5 assigns ECP Tracking Numbers and enters applicable data into MODMIS.

**Step 2. Forward to Program Office.** AIR-1.3.5 forwards the ECPs to the Program Office for review and processing. The APML reviews the information in MODMIS, prepares the ECP packages for review, and distributes them to Configuration Management Program Review Team (CMPRT) members.

**Review**

ECPs are examined for completeness to ensure that the proposed changes meet program requirements and are in line with program OSIPs, budgets, and schedules.

**Step 1. Review ECP (Administrative).** The first step is to review the format and information contained in the ECP to ensure compliance with specifications governing the preparation and submission of ECPs (ANSI/EIA 649 and NAVAIRINST 4130. 1D (Draft)). The APML should ensure that the contractor has conformed to the instructions found in ANSI/EIA 649 and note all information that is either missing or requires clarification. The APML should perform an assessment to determine any incorrect information and should coordinate with the contractor to obtain that information. The results of the analysis should be documented in an ECP Analysis Report.

**Step 2. Review ECP (Technical).** During this phase of the assessment, the APML should determine if the contractor has accurately addressed all related Product Support areas. The APML should review the ECP in detail to ensure that the contractor has accurately depicted the impact of the change on logistics, research failure and cost data, contact cognizant government and contractor representatives to validate the data contained in the ECP, and request additional information for those areas that are lacking. The results of the analysis should be documented in the ECP Analysis Report.

**Step 3. Provide ECP Analysis Report.** The APML in coordination with the PMA should summarize the results of both the administrative and technical analyses in the ECP Analysis Report and provide it to the PM for distribution and presentation to the CMPRT. The report should: 1) Identify the scope of change on the logistics program, 2) Indicate financial impacts on the logistics program, and 3) Provide recommendations for prioritizing and consolidating the ECPs. The APML should be prepared to brief the results if required.

**Step 4. Convene CMPRT.** The PM should convene the CMPRT to review, prioritize, and assign disposition of the ECPs. Let's assume all ECPs will be reviewed concurrently. A member of the APML's staff should serve as the Secretariat.

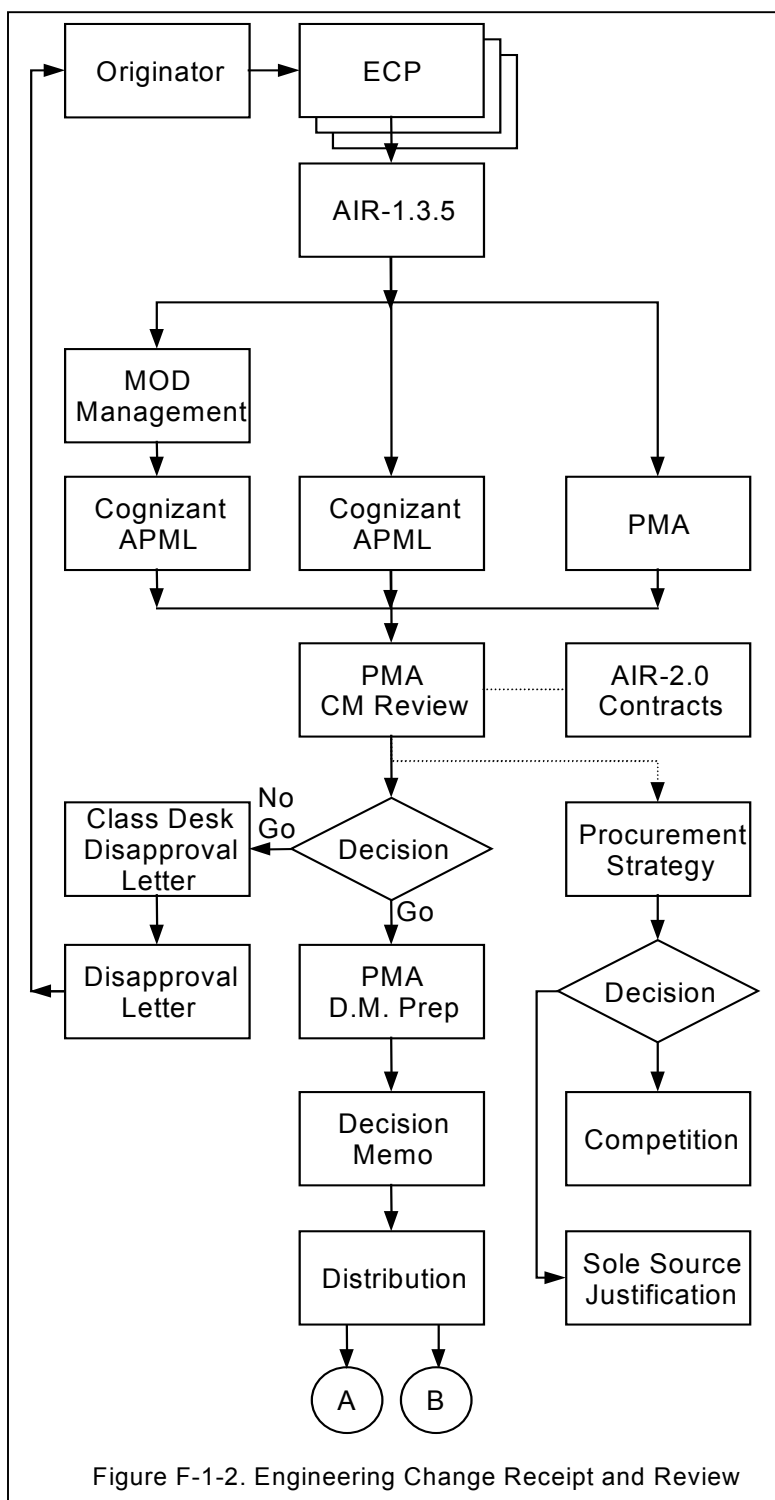


Figure F-1-2. Engineering Change Receipt and Review

**Step 5. Acceptance.** Based on the ECP Analysis Report and discussions conducted among members of the CMPRT, the CMPRT decides which ECPs to process and submit to the CCB.

**Step 6. Prioritize ECPs.** The CMPRT should prioritize ECPs according to the baselines affected (Functional, Allocated, Product), justification codes, need and urgency for changes, systems and equipment affected, methods of implementation (production, retrofit, attrition), production and retrofit effectivity, implementation schedules, and costs and cost savings. The APML provides technical support to CMPRT members.

**Step 7. Assign Disposition.** In an effort to improve operational capability of the platform and to expedite the modifications to the Fleet, the CMPRT consolidates the ECPs according to the functions and physical baselines affected by the modifications, type of incorporation (O, I, and D maintenance levels), method of implementation (production, retrofit, attrition), and compatibility of schedules. By consolidating ECPs in this manner, fewer ECP packages will be developed, processed, and tracked. This shortens the processing time and fielding in the Fleet. Since the CMPRT is comprised of decision-makers, including representatives from the LANT/PAC Type Commanders (TYCOMs), Contracts, and the Prime Contractor, we can assume that formal concurrences have been granted to process and implement the ECPs as structured by the CMPRT. The APML representative, serving as the CMPRT Secretariat, should complete the Decision Memorandum (DM) and the Controlling Custodian ECP Incorporation Plan Forms (TYCOM Concurrence for O and I retrofits), obtain the appropriate signatures from CMPRT members, and update the information in MODMIS. The Decision Memorandum formally documents the PM's decision to process the ECPs and to seek CCB approval, directs key members to initiate and coordinate required technical staffing, and directs the preparation of necessary documentation (ECP MAT Package) for presentation to the CCB.

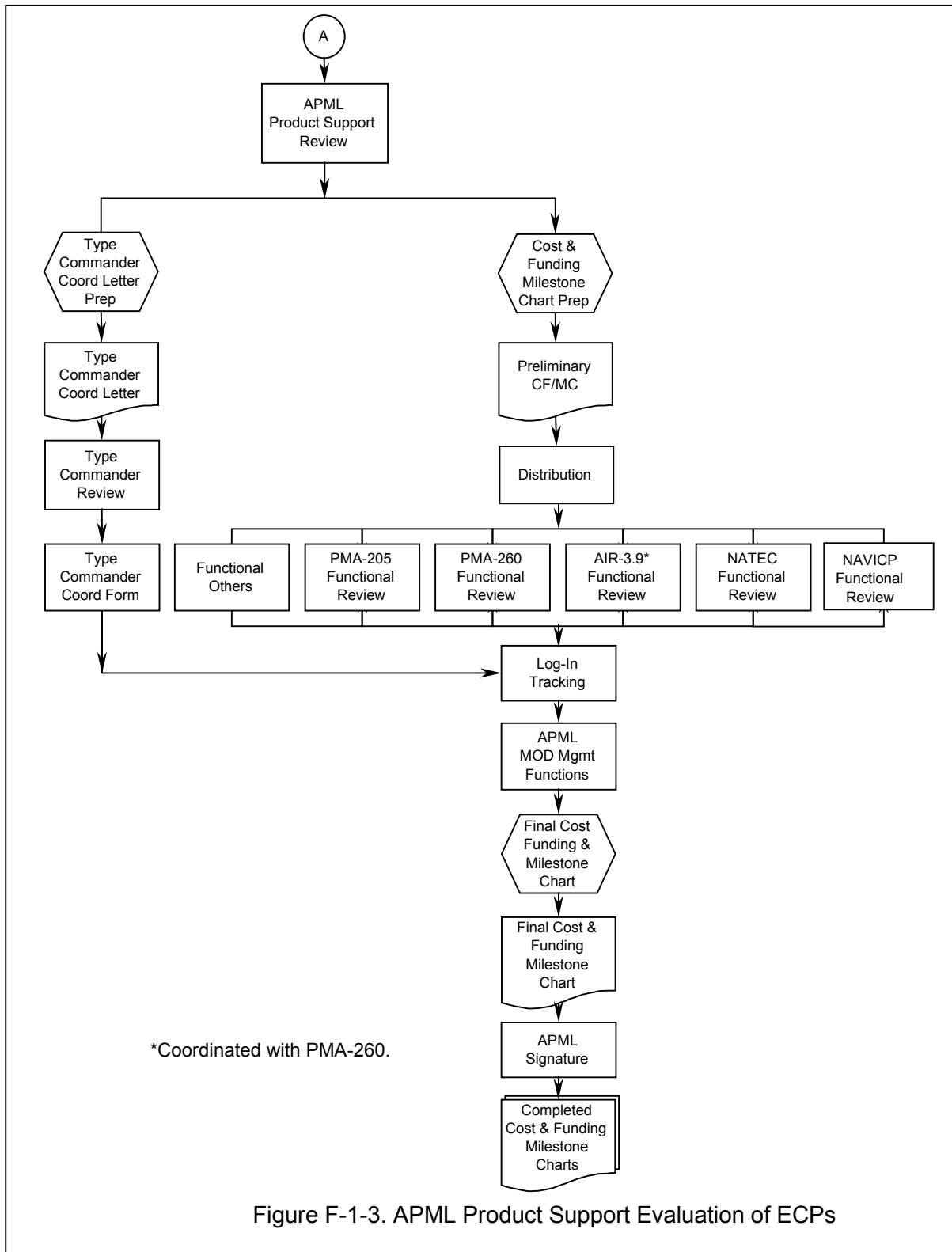
**Step 8. Publish/Distribute Minutes.** The APML assists the Secretariat in publishing and distributing the CMPRT minutes, including the Decision Memorandum and TYCOM Concurrence forms. It should be the goal to distribute the minutes within 15 days, 45 days earlier than the NAVAIR requirement of 60 days for issuance of the Decision Memorandum. Engineering Change Receipt and Review are summarized in Figure F-1-2.

### **Revision & Change**

If the CMPRT did not reject nor determine any ECP to be technically inadequate no ECP Rejection Letter or Amendment Letter needs to be written and sent to the ECP originator, the Prime Contractor.

### **Mat Preparation**

The APML prepares portions of the ECP MAT Package and distributes it to the appropriate activities for their review, tracks status of the review, and prepares the final ECP package for presentation to the CCB. The APML coordinates with those activities to ensure a timely, quality review.



## STAFFING & EVALUATION

Once the Decision Memorandum has been issued and the ECP MAT Package has been distributed, an in-depth logistics and engineering evaluation (Figure F-1-3 APML Evaluation) is conducted concurrently. The APML provides the support required to assist the Class Desk in their evaluation.

**Step 1. Product Support Evaluation.** The APML coordinates the logistics technical review with his Logistics Element Managers (LEMs). The staffing requirements depend on the nature of modifications proposed, the logistics technical factors impacted, and the Logistics competencies affected. The APML initiates this staffing process by preparing separate CCB Change Request/Directives and Staffing/Concurrence Forms for logistics staffing as well as Cost and Funding Summary, Milestone Chart, and Support Equipment Requirements forms. A Supplemental Procurement Request/PM Implementation form is not required unless there are follow-on buys for this task. TYCOM Concurrence should have been obtained during the CMPRT review and the signed Controlling Custodian. ECP incorporation Plan Forms were included with the logistics review package prepared by the APML. The APML also assists with the evaluation process by coordinating with the LEMs and obtaining concurrence signatures. The APML develops a preliminary change implementation plan. The Cost & Funding Summary and Milestone Chart comprise the implementation plan. These two documents reflect the items affected by the proposed change, funding, tasked activity, and schedule for implementation. Specific information (e.g., maintenance levels) can be shown in the Remarks section of the Milestone Chart or identified in the Tasked Activity.

**Step 2. Engineering Evaluation.** The Class Desk coordinates the engineering review (see Figure F-1-4 Engineering ECP). The staffing requirements depend on the nature of modifications proposed, the engineering technical factors impacted, and the system competencies affected. The Class Desk initiates this staffing process by preparing the CCB Change Request/Directive and the engineering part of the CCB Staffing/Concurrence Form. If GFE is involved, the Class Desk prepares the CCB Change Request/Supplement (GFE Requirements) and MGFEL Change forms. Each engineering competency evaluates ECPs in parallel and provides Request/Supplement (GFE Requirements) and MGFEL Change Forms concurring with GFE requirements. AIR-4.1.10 signs the CCB System Safety Assessment, if required, for safety related ECPs. If formal operational testing is required, the Class Desk prepares the Supplementary Operational Test and Evaluation (OT&E) Certification Form, coordinates with OPTEVFOR and AIR-1.6, and obtains the appropriate certification signature. The APML monitors this process and supports the Class Desk to ensure a timely evaluation.

**Step 3. Schedule CCB.** After all signatures have been obtained, ECP Packages are presented to the CCB Secretariat. The Secretariat verifies the packages for completeness, updates MODMIS, and schedules a formal CCB. If an ECP package is incomplete, it is returned to the PM for corrective action.

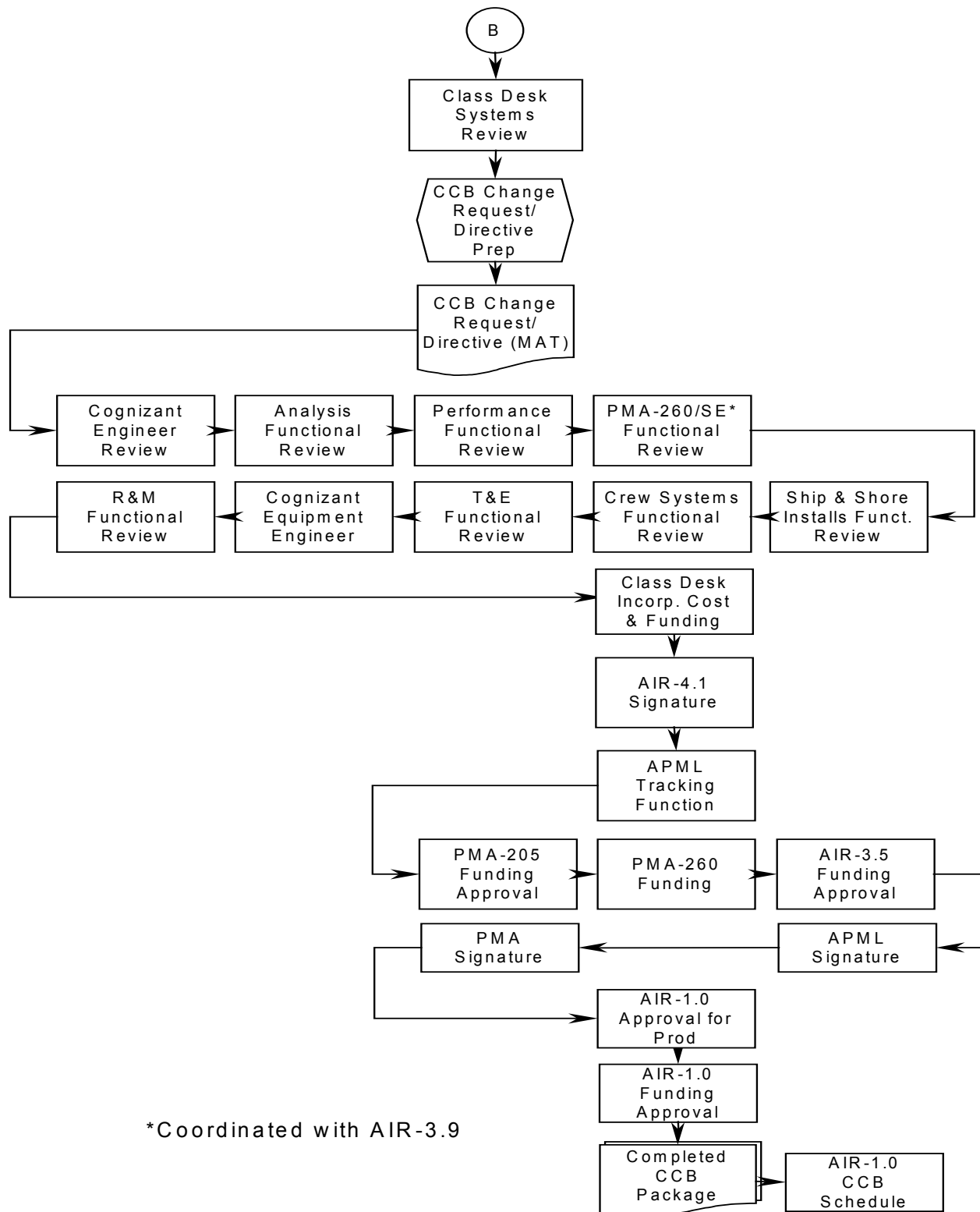


Figure F-1-4. Engineering ECP Processing



## CCB Approval

The PM convenes and chairs the CCB in accordance with the Program Office Charter for Configuration Control.

**Step 1. Approval Process.** The Class Desk and APML present the engineering and Product Support findings with a concerted recommendation for approval. The APML provides the technical and administrative support to resolve or mitigate risks identified and concerns expressed during the evaluation process

**Step 2. Publish and Distribute Minutes.** The APML assists the Secretariat in publishing and distributing the CCB minutes, including the CCB Notification Letter. It should be an APML goal to distribute the CCB minutes within 5 working days. A master copy is forwarded to the NAVAIR Configuration/Data Management Division, AIR-1.3.5, for retention in the NAVAIR archives files. Let's assume that the CCB did not reject any ECPs. Therefore, no ECP Rejection Letter or Amendment Letter needs to be written and sent to the ECP originator, the Prime Contractor.

## ECP Implementation

Implementation is a critical phase of the ECP process. There are four significant actions that the APML needs to support from CCB approval through final installation: 1) Implementation Direction, 2) TD Processing, 3) Funding, and 4) Ordering, Delivery, and Installation. These steps involve the actions of both government and contractor activities. Continuing and pro-active management attention needs to be paid during this time. It is crucial for the modifications be incorporated completely and expeditiously. The APML provides the technical support to successfully complete the steps (summarized below and shown in Figure F-1-1) associated with the four implementation actions.

### Implementation Direction

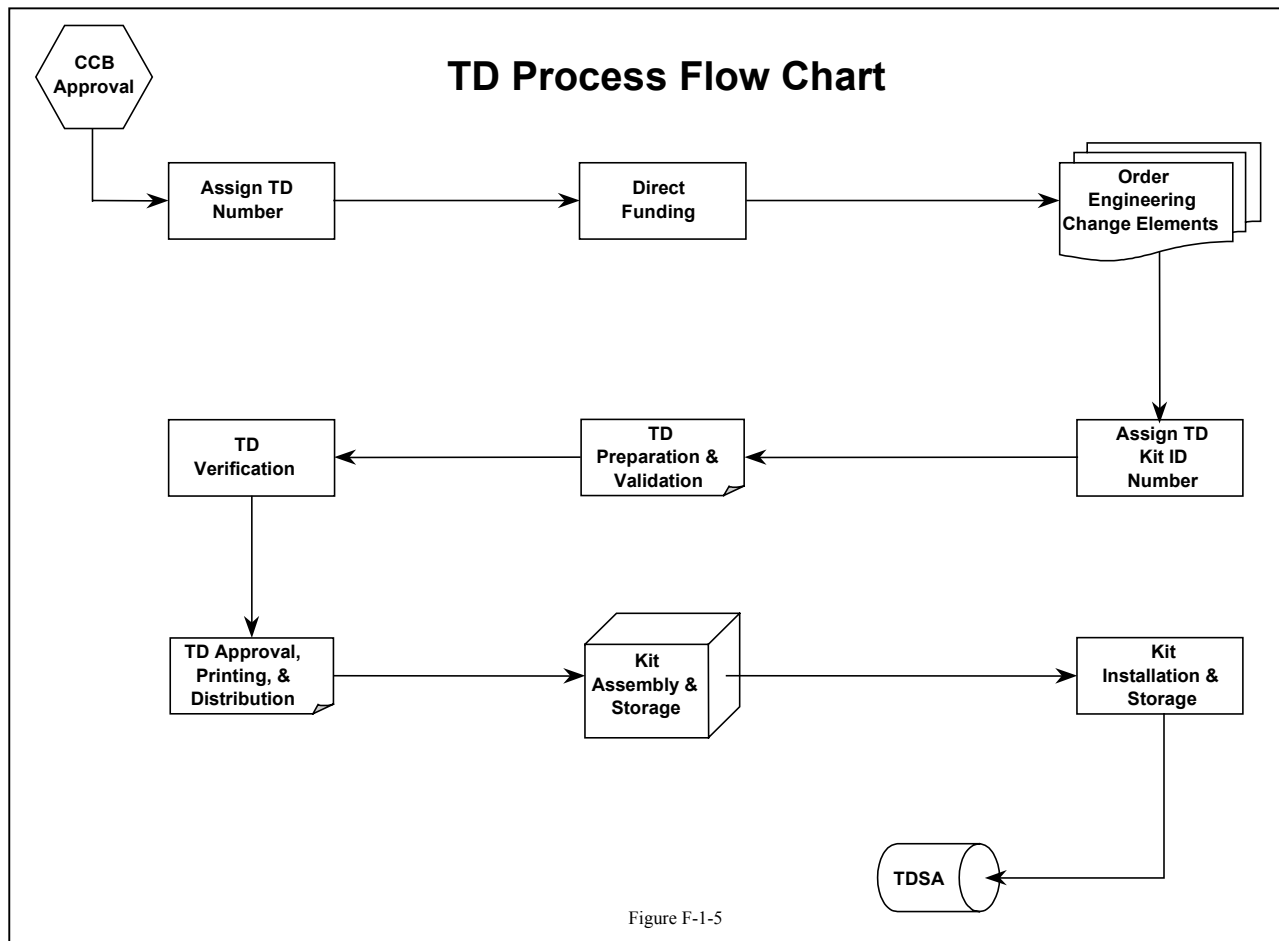
**Step 1 Review.** After the CCB approves the ECP the APML reviews the minutes that contain the approved services that are to be procured and the implementation milestones for the approved ECPs.

**Step 2. Enter into MODMIS.** Within two weeks of CCB approval, data should be entered into the MODMIS database to reflect administrative data, approved cost & funding data, and approved milestone data for the approved ECPs. The APML reviews the MODMIS database to ensure that no errors have been made in the data entry process.

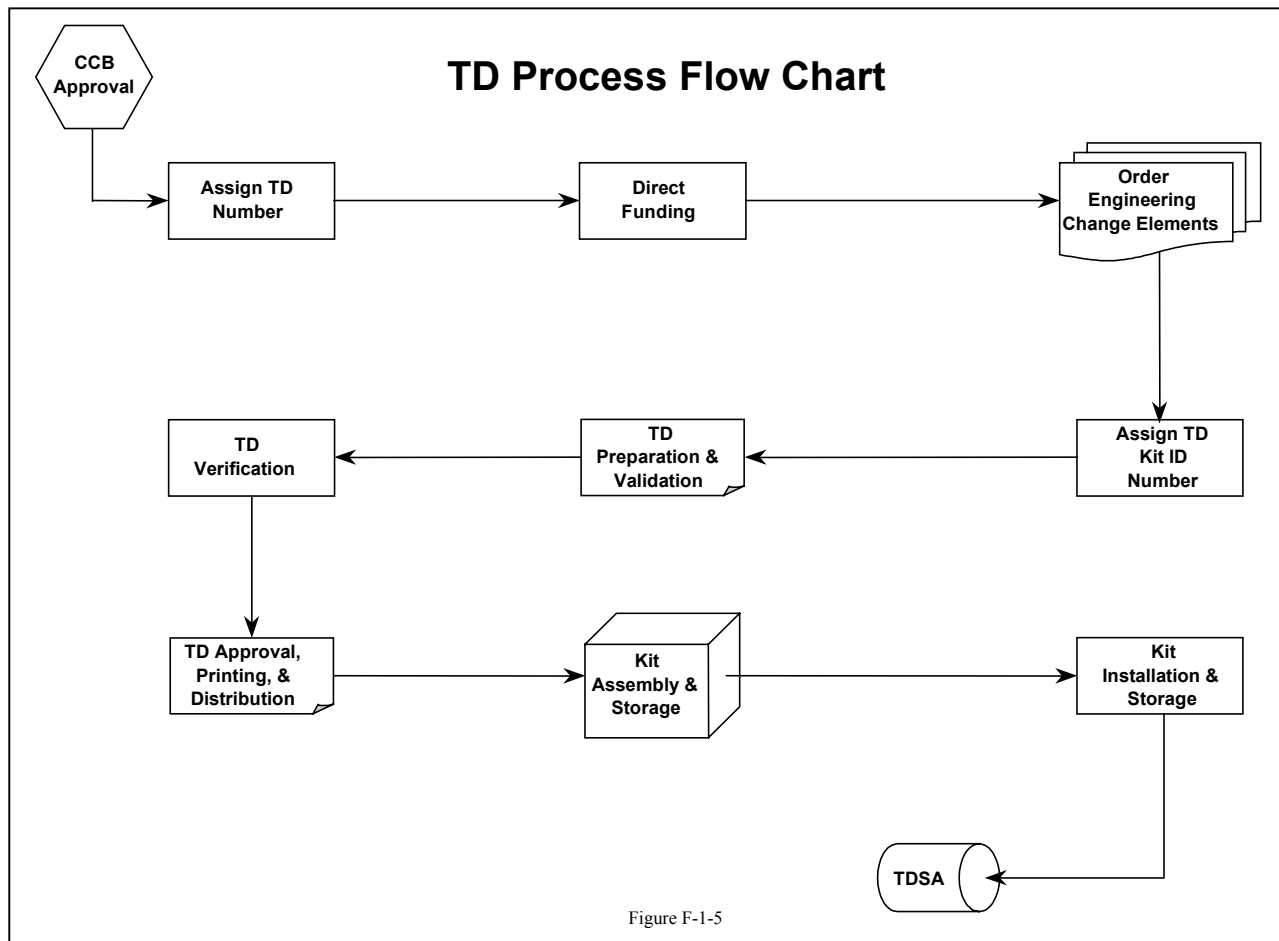
**Step 3. CCB Modification Directive/Implementation Letter.** The Implementation Letter for the ECP, while not being an authorization vehicle, does reflect approved CCB funding data and milestone data to the prime contractor or agency. This letter is reviewed to ensure the accuracy of this initial data that the prime contractor receives. The CCB Change Request/Directive once approved and signed by the CCB Chairman becomes the modification directive. This CCB decision does not mean that the contractor is authorized to proceed with the performance of the change activity. Additional government actions including preparation of required funding documents and

authorizations are usually necessary before the contractor or Government can be told to officially proceed with the change. A formal contract modification is processed by the PM through the Contracting Officer to effect a Contractor ECP. An approval letter from the PM is required to effect a performing Government activity ECP. The APML should:

- 1) prepare the change implementing directive/order designating specific responsibilities to associated activities in support of the change,
- 2) distribute the preliminary directive/order for review, validation, check out, and comment,
- 3) revise the implementing directive/order in accordance with accepted comments, and
- 4) provide the final change implementing directive/order for PM CCB signature.



authorizations are usually necessary before the contractor or Government can be told to officially proceed with the change. A formal contract modification is processed by the PM through the Contracting Officer to effect a Contractor ECP. An approval letter from the PM is required to effect a performing Government activity ECP. The APML should: 1) prepare the change implementing directive/order designating specific responsibilities to associated activities in support of the change, 2) distribute the preliminary directive/order for review, validation, check out, and comment, 3) revise the implementing directive/order in accordance with accepted comments, and 4) provide the final change implementing directive/order for PM CCB signature.



**TD Processing.** Lets assume that the PMA has been chartered by AIR-1.3.5 to oversee engineering changes (which include retrofit engineering changes). Please refer to Figure F-1-5. TDs are used by NAVAIR to direct those modifications or one-time inspections of Naval aviation aircraft, engines, support equipment, maintenance trainer panels, and serial numbered weapons system components in the custody of contractor, Navy, or Marine Corps units.

**Step 1. Assign TD Number.** The APML provides TD titles and corresponding codes. Once approved, the APML coordinates with the Naval Air Technical Data and Engineering Services Command (NATEC) to obtain TD Numbers for status tracking and monitoring of the TD development, validation, verification, and installation.

**Step 2. Order Engineering Change Elements.** There are five basic change elements associated with a retrofit change: 1) TD, 2) Non-Recurring Engineering (NRE), 3) change kits, 4) installed equipment including GFE, and 5) depot level installation.

TDs, NRE, kits, installation, and installed equipment associated with retrofit changes are normally funded with APN-5 funds. For production or production/retrofit changes, NRE and installed equipment are funded with APN-1 funds for production changes. The APML in coordination with the PMA should ensure that funds are applied appropriately.

**Step 3. Assign TD KIT Identification Number.** The APML should request TD Kit Identification Numbers (KINs) from AIR-3.1.8. Numbers are assigned to the kits and GFE involved with the modifications. KINs allow for automated reporting of inventory, tracking, and transactions. The APML should monitor this process.

**Step 4. TD Preparation and Validation.** The preliminary draft of the TD is reviewed by the APML to ensure accuracy of data (NAVAIR Manual 00-25-300 applies). There are four categories of TDs - Immediate, Urgent, Routine, and Record Purpose. Routine TDs require compliance that is normally accomplished during scheduled maintenance periods.

**Step 5. TD Verification.** Verification is the process by which the Navy tests a preliminary TD for accuracy and adequacy. An actual installation of a TD Kit is conducted (normally) on the first retrofit field kit. The purpose of this installation is to ensure that the installation can be accomplished by Navy personnel at the prescribed maintenance level cited in the TD. The APML should monitor the verification effort for timeliness. As a cost and time saving measure, the APML may recommend that validation and verification be conducted concurrently. Lack of timely and efficient verification of TDs delays a program since incorporation of equipment must be accompanied by an approved TD. This is not critical with a Record Purpose type TD since this type of TD is issued after all effected equipment has been incorporated.

**Step 6. TD Approval Printing and Distribution.** The TD is updated by the ECP originator who incorporates comments submitted during the verification process. A master copy of the TD is sent to the PMA for approval (as designated by AIR-3.1.8) and reviewed by NATEC prior to signature. The APML in completes TD checklists and

documenting kit, GFE, and logistic support availability. An 8-year rescission date is assigned to Routine TDs. The APML forwards the approved TDs to NATEC for archiving and tracking. NATEC forwards the TD to the Defense Automated Printing Services Office (DAPSO) for printing and distribution.

**Step 7. TD Kit Assembly Shipment and Storage.** The APML reviews kit development and kit shipment efforts of the Prime Contractor. Kit shipment documentation is analyzed to evaluate timeliness and accuracy. The manufacturing activity assembles the kits and prepares the kits for shipment to the designated Navy Central Kitting Activity (CKA) in Orange Park, Florida. AIR-3.1.8 is the Change Kit Manager for NAVAIR and provides shipping instructions to the kit manufacturers. A copy of the TD accompanies each kit. The APML should ensure that the data from the TD Kit Shipment Report (TDKSR) is entered correctly in TDSA.

**Step 8. TD Kit Installation and Reporting.** TD Kits are ordered (by using activities) by KIN and installed in accordance with the accompanying TD. The APML should monitor the installation efforts of the modifying agency to ensure the efficient incorporation of equipment and kits. For O and I levels of incorporation the TD provides planning and direction guidance. Contractual authority is required for contractor installation. The APML coordinates efforts between the TYCOM and Naval Aviation Depot (NADEP) for organic depot installations.

**Step 9. Data Management TDSA.** TDSA provides configuration and inspection accounting of Naval aviation aircraft, engines, support equipment, maintenance trainer panels, and serial numbered weapons systems components. It allows for collection of TD application and incorporation data, structures it in System 2000 (S2K) format for NALDA compatibility, and allows for easy retrieval by random access through remote NALDA terminals. Timely and accurate reporting of TD Compliance (TDC) data is important in providing management with information necessary to make informed decisions concerning equipment configuration, workload projection, and engineering analysis of incorporated changes. In providing TDSA data base management support, the APML should develop and maintain the computer programs required to store, process, and retrieve information to and from the TDSA data bases. One active and one history database should be maintained for each equipment grouping (i.e., aircraft, engines, support equipment, maintenance trainer panels). The APML should update TDSA databases to reflect TD compliance against applicable equipment as described below:

- TDs should be reviewed and loaded into the TDSA database based upon receipt of hard copy TD documents.
- XRAY messages are inserted when received. Period end dates are updated as required. Aircraft Engine Management System (AEMS) data is used on a monthly basis to update the TDSA engine inventory database ensuring that it correctly identifies the latest engine status and module assignment.
- Equipment listings are reviewed for accuracy of all data elements. New equipment is added to the TDSA database as required.

- TDSA cataloging data is loaded on a daily basis to reflect information contained in official NAVAIR documentation (i.e., CCB Directives, implementing letters and TDs).
- When in receipt of notices of errors as annotated on returned Lists Nos. 02 and 04 by reporting custodians, the data file is corrected and mailed on the next mailing cycle.
- TDSA databases are updated biweekly using TDC Reports received from the Fleet via the Navy Maintenance Support Office (NMSO).
- 3M transaction reports are reviewed and corrected when receiving cognizant controlling custodians and functional wings are notified of excessive error reporting.
- History files are updated annually.

The APML should prepare and distribute the following lists to controlling custodians, functional wings, and reporting custodians as detailed:

- List No. 01 (Applicability List). A list of effective TDs providing specific applicability information. Produced semi-annually and distributed to functional wing and reporting custodians.
- List No. 02 (Technical Directive Requirements Not Incorporated (NINC) listing) Distributed to reporting custodians quarterly, listing effective TDs applicable to a specific BUNO/SERNO but not incorporated.
- List No. 03 (Wing Aeronautical Technical Directive Requirements (ATDR) Matrix. Distributed to functional wings quarterly, listing BUNO, TDs, and incorporation status.
- List No. 04 (Technical Directives Requirements Incorporate (INC) listing). Distributed to reporting custodians quarterly, listing effective TDs applicable to a specific BUNO/SERNO and reported as incorporated.
- List No. 04H (History File). Maintained to reduce active file volume and to reduce operating cost. Produced and distributed annually to reporting custodians.

It may be necessary to track several TDs as they are issued by the CCB until compliance data is received and entered into the TDSA system. If that is the case the APML should establish a process action team to evaluate various facets of the TDSA system on an ongoing basis to identify problems and provide AIR 3.1.8 with recommendations for solutions to improve the quality of the TDSA program. The APML should: 1) Review preliminary copies of TDs during verification to ensure that data elements affecting TDSA are accurate and trackable, 2) Analyze CCB approvals and

hard copy TDs for completeness and accuracy of source data, 3) Review TDs entered into the TDSA database to ensure that the initial entry of data matches that contained in the TD, 4) Establish and maintain close liaison with TDSA users to assess the compliance submittal processes currently being used, 5) Evaluate TD compliance data for quality and quantity of data submittals, and 6) Use the information obtained during these analyses to identify requirements for changes to the TDSA programs or procedures and to recommend to AIR 3.1.8 possible solutions. Now, please refer back to Figure F-1-1.

**Funding.** After CCB approval, the Requiring Financial Manager (RFM) verifies funding has been assigned to and available in STARS account prior to directing ECP funds to the various NAVAIR functional activities (cited in the CCB implementation instructions) via Project Directives (PDs). These funds are now available for purchasing required elements of the engineering change.

**Ordering, Delivery, and Installation.** The various support elements identified in the ECPs are ordered, delivered, and installed in accordance with the CCB Modification Directive.

## TDSA

**Status Accounting and Monitoring.** Configuration Status Accounting (CSA) is the process of creating and organizing the knowledge base necessary for the performance of configuration management. In addition to facilitating CM, the purpose of CSA is to provide a reliable source of configuration information for program and project activities including program management (Systems Engineering, manufacturing, software development and maintenance, logistic support, modification, and maintenance). CSA receives information from other CM and related activities as the functions are performed. It is constrained only by contractual provisions that establish program life cycle phase, tasks to be performed and the organization (government or contractor) tasked to perform them. Let's assume that TDSA, CMIS, and MEARS has been integrated as the NAVMR CM information system, that the Prime Contractor has been provided with the software tools to interface with those systems as well as with the Program Office website. The CM database system should interface with these systems to ensure continuity and integrity of data among the CM ECP processing participants. Information should reside where it is most economical and accessible for use online by all who have appropriate data rights and are granted access privileges. Contractor and government CSA information could be merged in what would appear to be a seamless (virtual) database. It could be an APML goal to have a fully Integrated Data Environment in which government and contractors share information electronically. In such an environment data input by one source is accessible to all associated organizations in the program chain from subcontractors to contractors, government acquisition offices, depots, and maintenance, and other field activities. A fully automated, interactive system linked to government and contractor data repositories for retrieval of archival data may be the cheapest possible operational scenario with the most accurate and easily accessible information. While at the present time such a system is not a reality, partial solutions are currently being implemented building upon legacy systems that are in place. Legacy systems are typically more expensive to run



[illegible]

## Tools

### ***Status of Standards on Technical Reviews***

- ## Technical Reviews

- Alternative Systems Review (**ASR**) demonstrates the preferred system concept(S) to take forward into Concept Advanced Development.
- System Requirements Review (**SRR**) is conducted to ensure that system requirements have been completely and properly identified and that there is a



mutual understanding between the government and contractor. Captures systems requirements that go with Concept Technology and Development phases, and is generally conducted just prior to, or shortly after Milestone B.

- Integrated Baseline Review (**IBR**) provides a review with intent to understand the Program Management Baseline (PMB), to evaluate and identify risks, assess impact, and agree on a plan of action. IBRs are conducted on contracts that utilize Earned Value Management (EVM). The initial IBR should be conducted within 6 months of contract award.
- System Functional Review (**SFR**) is conducted to review conceptual design of the system to establish its capability to satisfy requirements. It establishes the Functional Baseline (FBL).
- Software Specification Review (**SSR**) provides a forum to approve Software Requirements Specifications for each CSCI to implement system performance requirements in approved FCD.
- Preliminary Design Review (**PDR**) confirms that the preliminary design logically follows the SFR findings and meets the requirements. It normally results in approval to begin detailed design. Establishes the Allocated Baseline (ABL).
- Critical Design Review (**CDR**) evaluates the completeness of the design and its interfaces. Establishes the Product Baseline (PBL).
- Test Readiness Review (**TRR**) is a review of the contractor 's readiness to begin testing Configuration Items (CIs).
- Flight Readiness Review (**FRR**) ensures the proper people, planning, equipment, materials, training, configuration, flight clearance, (or defined flight clearance process, with plans to get an initial flight clearance at FRR), ranges, instrumentation,, safety controls, and risk assessments/mitigations are in place prior to flight.
- Operational Test Readiness Review (**OTRR**) is a Systems Engineering Technical Review conducted to confirm there is a high probability the system will successfully complete operational testing, and that all required documentation has been provided to Commander, Operational Test Force (COMOPTEVFOR). Other issues such as support contracts and resource availability may also be addressed. Pre-OTRR, a review where functional experts (and perhaps PEO management) provide the PMA with an objective evaluation of the system's Readiness for OT&E, is often conducted prior to the OTRR.
- Production Readiness Reviews (**PRRs**)/ System Verification Review (**SVR**): PRRs are conducted prior to any rate production decision to validate design readiness, resolution of production engineering problems, and accomplishment

of production phase planning. SVRs are conducted to verify that the actual item (which represents the production configuration) complies with the performance specification.

### ***Technical Reviews and Audits***

- *Technical review:* Determining that the development of a Configuration Item has reached contract milestone requirements. *Configuration audit:* Checking an item for compliance with its configuration documentation.

### **APML ROLE –**

- Review the system CM program including, planned improvements, schedule and budget
- Ensure CM requirements identify roadmap to include CMIS, OOMA and SIGMA tasks necessary to baseline and sustain accurate systems configuration.
- Review program processes for ECP management including, Configuration Review Board (CRB), staffing process, Configuration Control Board, and whether a centralized or de-centralized CCB is in effect.
- Determine ILS team CM management structure or individual manager of the process
- Maintain interface with the system APMSE, IPT, CM members for ILS requirements

Ensure all aspects of current change activity is identified, tracked and funded including, review, staffing, Implementation, Technical Directives, modification management (kits, field mod teams, repair incident to mod, contract vehicles, and documentation)

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1.8	Configuration Mgmt (CM) Division	NAVAIR HQ	(301) 757-8255
AIR-1.1.3	Head, Program Mgmt CM	NAVAIR HQ	(301) 757-9090
		San Diego	(619) 545-2287
	CKA, Navy Maintenance Support Office (NMSO)	Orange Park, FL	

## REF –

MIL-HDBK-61A Appendix D

NAVAIR Configuration Management Training Course

NACMED II

NTDSED

APML Orientation and Product Support Fundamentals

ANSI/EIA 649

EIA-836, "Consensus Standard for Configuration Management Data Exchange and Interoperability,"

NAVAIR 00-25-300

Aircraft Engine Management System (AEMS)

MIL-STD-973

## LINKS-

[www.nalda.navy.mil](http://www.nalda.navy.mil)

Logistics Tool Box

[4130.1C](#)

NAVAL AIR SYSTEMS COMMAND CONFIGURATION MANAGEMENT POLICY

<https://www.nalda.navy.mil/cmisl>

Logistics Tool Box

<http://web1.deskbook.osd.mil/default.asp?>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[AIR-1.1.1 NAVAIR Team Acquisition Guide \(15th Edition\) April 2000](#)

Chapter X: Configuration Management (Discretionary)

## F-2 - CONFIGURATION MANAGEMENT INFORMATION SYSTEM (CMIS)

**WHO** – APML, IPTs

**WHAT** –

- Automated Configuration Management (CM) tool
  - Uses Oracle relational database technology
  - Adheres to required functional CM business practices
  - User friendly
  - Open architecture
- Simplifies large-scale CM by capitalizing on Information Technology (IT) to enable identification and management of product data at any point in time
- Expedites real-time user access to closed-loop CM data over a product's lifecycle, by integrating common data

**WHY** –

- Designed with user participation, to ensure that operational product meets user community requirements.
- Simplifies large-scale CM by capitalizing on Information Technology (IT) to enable identification and management of product data at any point in time
- Offers a seamless view of the relationship between a part, its documentation, and associated attributes
- designed to interface with existing systems that facilitate the collection, storage, manipulation, and use of CM, engineering, logistics, and procurement technical data.
- Expedites real-time user access to closed-loop CM data over a product's lifecycle, by integrating common data
- Utilizes existing Government Off-the-Shelf (GOTS), Commercial Off-the-Shelf (COTS), and Non-Developmental Item (NDI) third party software products to realize Government cost savings

**WHEN** –

- New Programs: Initially in systems acquisition
- Legacy: At anytime with coordination and interface with the program IPTs

**WHERE** – NAVAIR, Fleet, Prime Contractor

**HOW** – Contact the POC below for information and questions regarding initiation and application. CMIS specifics provided below.

**CMIS** is an automated Configuration Management (CM) tool provided to Components of the Department of Defense (DoD). CMIS adheres to required functional CM business practices, is adheres to required functional CM business practices.

CMIS simplifies large-scale CM by capitalizing on Information Technology (IT) to enable identification and management of product data at any point in time. CMIS uses Oracle relational database technology to integrate the support required by the CM, engineering, and logistics disciplines. By integrating common data, CMIS expedites real-time user access to closed-loop CM data over a product's lifecycle.

**CMIS: Your Lifecycle Configuration Management Tool Cross-referencing Weapon Systems to Configuration Items (CIs)** You can identify end items as weapon systems and manage the major components that comprise the weapon system. Weapon systems can consist of any number of CI components and assemblies. Although CMIS does not impose limitations on how to define what you manage as a weapon system, DoD Directive 5000.1 provides dollar threshold and mission requirement targets.

The identification of CIs and the association to the specific design is integral to effectively managing the technical documentation that defines them. You can identify the relationship between a CI and specific engineering design requirements, including the engineering design structure. The CI can be tied to its developmental baselines (that is, functional, allocated, and product) prescribed by MIL-STD-973 for lifecycle management purposes.

Within weapon systems, all CIs and design parts are identified and linked to specific engineering documents or drawings that define and detail the functional and physical characteristics of the item.

**CI Management by Date for Multiple Baselines:** Technical data, including engineering drawings, specifications, standards and technical manuals can be attributed directly to a CI. All revisions of the CI technical data are maintained, thus providing you access to the CI dated baseline. Multiple date effective baselines can be created for each CI for the functional, allocated, and product baselines.

You can reconstruct or freeze the CI technical baseline data that define the CI. CMIS facilitates performing baseline comparisons of any of the two dated baselines and the current baseline. CMIS highlights the differences between the baselines for revision, applicability, and if pending changes exist.

The management of CIs by baseline and baseline structure is also integral in managing serialized weapon system end items of equipment (platforms). You can relate platforms to the CI baseline that describes the specific block of production, thus associating a platform to its related technical documentation. This allows you to identify the exact configuration structure that the platform was built to or modified against.

**Controls Hierarchical Indenture Structures:** CMIS maintains current and historical configuration baselines to the lowest level of replacement or maintenance by serial-number or piece-part. CMIS manages the complex parent-to-child relationships associated with multi-level baselines. Organizations have online access to single and

multi-level document and part structure queries. This information is vital when performing impact analyses of proposed changes and preparing procurement Technical Data packages (TDPs).

**Cross-references Relationships:** Managing associated documents for each part, CMIS locates equivalencies between a part and its associated documents regardless of common elements in the identifier numbering schemas that are assigned (for example, document number versus part number).

The design item and vendor part number identification are used by CMIS to cross-reference functionally identical parts that are supplied by different vendors. Users can identify equivalent parts from different manufacturers for reliability, maintainability, availability analysis, and procurement. Functionally equivalent parts are tracked through the alternate vendor part number or its corresponding National Stock Number (NSN) relationship. Additionally, alternate and substitute documentation and parts are tracked within the engineering configuration and Bill of Materials (BOM) structures.

Technical data, including engineering drawings, specifications, standards, and technical manuals can be attributed directly to the CI, by date. Each historical revision of specific technical data attributed to the CI during its lifecycle can be identified and managed.

**Baseline Version Comparisons by Date:** CMIS records and maintains the current installed baseline of an end-item in operational inventory (that is, fielded assets) by its Hierarchical Structure Code (HSC). Using CMIS, you can capture baseline configuration data by either creating a dated baseline or by freezing the baseline. CMIS manages CI baselines based on an effective date for any baseline type; thus, allowing management of a specific version (or revision) of the CI by application of the technical requirements throughout the lifecycle.

CMIS enables you to perform baseline comparisons of an item at any point-in-time. You can compare any two baselines, whether they are current baselines, dated baselines, or frozen baselines. Using CMIS, you can rapidly determine the differences between two baselines for a given CI, including all changes in revision, additions to the configuration, removals from the configuration, and any pending changes proposed against an item with the CI configuration. This reduces lead-time in validating your Technical Data Packages (TDPs) and enables you to dynamically reconstruct the configuration of a platform if anything detrimental occurs.

**Access to JEDMICS:** CMIS supports the Continuous Acquisition and Lifecycle Support (CALS)-standard image formats stored in Consultative Committee International Telephony and Telegraph (CCITT) Group IV (CALS Type 1 and 2, TIFF, and NIFF) raster format. This format is specified in the CALS Military standard (MIL-STD) MIL-R-28002. Leveraging off the seamless integration with the TMS/FAX™ viewer, users can electronically request and view images from standard DoD repositories, such as the JEDMICS repository.

**Tracks by H/W Revision and S/W Version:** The program versions of software installed on specific tracked assets are captured and tracked via the installed configuration of the tracked asset. The Computer Program Identification Number (CPIN) are tied to the tracked asset and its next higher tracked asset, reflecting the physical installation of the software program in its serialized hardware structure.

**Supports Impact Analysis:** CMIS supports complete change impact analysis by providing users access to all affected data, including configuration items (CIs), serial numbered components, drawings, specifications or standards, contracts and CDRLs, incorporated relationships to other changes, production and fielded items, and estimated retrofit kit delivery schedules. Users can perform "where-used" queries of affected documents and parts to determine the impact when implementing a change.

**Manages ECP Process:** CMIS manages the engineering change process from creation through distribution, review, comment, recommendation of approval/disapproval of proposed changes (for example, Engineering Change Proposals [ECPs], Request for Deviations/Request for Waivers [RFD/RFW]), and incorporation of approved changes. As change documents progress through the review and implementation process, the relational database is seamlessly updated to ensure real-time accuracy of production and reprourement configuration information and status.

CMIS provides closed-loop change management of product configurations, including visibility of pending and proposed changes against an item as well as on-line distribution, review, comment, approval/disapproval, and incorporation/release mechanisms of approved changes. Engineering Change Proposals (ECP), Request For Waivers (RFWs), and Request For Deviations (RFDs) in either MIL-STD-973 or MIL-STD-480B format are currently supported. CMIS also supports short-form change documents.

Change documents are created, delivered, and reviewed in Continuous Acquisition and Lifecycle Support (CALS)-standard data formats using Standard Generalized Mark-up Language (SGML) tagged text, Consultative Committee International Telephony and Telegraph (CCITT) Group IV raster format images, and hypertext. Although CMIS can generate change documents in CALS formats, vendors may use any tool that output the same standard CALS formats to provide the proposed change documents to the reviewing activity. Configuration Control Board (CCB) members can recommend the final disposition of the change document to the approving authority who ultimately determines the online approval or disapproval of the change.

**CCB Milestones:** CMIS allows for the assignment and tracking of CCB activities required to manage the change across the entire support structure of the project/program office responsible for managing the affected CIs. This functionality also allows for the identification of discrete implementation actions required by various communities to review the proposed change, plan for actions associated with the new requirements, and provide and update suspense dates associated with the review and implementation of the change.



Each implementation action may require the tracking of individual milestones to program successfully for the change. These milestones are identified, along with the planned and actual dates associated with their accomplishment. The funding requirements associated with each implementation action will also be cited. Any deliverable products that are produced can be identified and attributed to the associated milestone.

The reviewing community, tasked by the CCB, can be identified and attributed to their specific implementation milestone. These milestones will provide a management perspective of the receipt, review, and completion of CCB mandated actions by activity code.

**Modification Instructions:** When you implement an approved engineering change, CMIS helps you manage the modification instructions (Technical Directive, TCTO, etc.).

**Modification Kit Support:** CMIS allows the user to track the requirements for compliance and implementation of the modification, kits used to implement the change, and the affected platforms including the maintenance actions performed on a platform.

**Serialized Asset Information:** CMIS identifies the configuration of an end-item, component, or assembly by its assigned serial number. These serialized assets are defined by their part number, CAGE, and serial number. Any changes in part/CAGE/serial number attributable to a serialized asset are tracked, as well as the asset's date of manufacture, warranty expiration date, and number of reworks. Specific information attributable to engine modules will consist of the latest engine status transaction number and transit-accepted information.

CMIS captures data for the current and historic configurations of a serialized asset. These configurations are based on a serialized component structure. The information collected will identify the next higher/lower part/CAGE/serial number, installation/removal activities, and applicable modification instructions, and time/cycle information. Updates to this information will come from maintenance actions and Engine Transaction Reports (ETRs). A relationship is drawn between a serialized configuration and the design item structure it represents. The serialized and non serialized part number composite can be attributable to each tracked asset.

CMIS incorporates the historical data of serialized tracked assets on platforms and other serialized assets, by date. Information available will consist of remove/install dates, Job Control Numbers (JCNs), remove/install activities, time/cycle at remove/install, and install/remove ETRs. CMIS tracks the ownership history of a tracked asset and or platform. Ownership can be identified by an activity (that is, UIC) or by a specific organization within an activity. History of ownership is tracked by transfer and acceptance dates.



By capturing data for the actual and historical configurations of a platform, all serialized components installed on a platform are identified. The information collected reflects the next higher/lower part/serial CAGE numbers, install/remove JCNs, install/remove activity codes, applicable ECPs, and required Modification Instructions (MIs). This information allows the user to capture a "snapshot" of the current configuration (that is, serialized component structure) of a platform at any given point in time.

CMIS identifies mandatory assemblies within tracked assets that meet operational or functional requirement. These assemblies/components must be calibrated and grouped (that is, custom fit) in order to function correctly. Install and removal activity of one matched component would require similar action for the other paired component.

**The Assembly/Module:** Transaction Report menu topic tracks the history of where an assembly or module was attached to or detached from an end-item. This report also provides cumulative daily and monthly reporting on engine status back to the controlling custodian. This function permits the strict tracking of the assembly or module through its lifecycle.

**Type/Model/Series:** CMIS assigns and tracks requirements for a Type/Model (TM) or Type/Model/Series (TMS). The TMS hierarchy and structure provides a link to the engineering design item structure to link the design structure to an end-item application structure. Approved design locations designate approved configuration locations for a design item within a hierarchical structure. The Hierarchical Structure Code (HSC) ties TM equipment to a specific configuration item (CI) baseline.

CMIS tracks both government and commercial activities by a specific activity identifier. This identifier may be distinguished by a Unit Identification Code (UIC), an organizational Materiel and Maintenance Management (3-M) code, or a long name descriptor. Due to the multiple reporting requirements of any activity to a next higher activity, a flexible organization structure is required to manage the flow of data and requirements.

Any configured item will have a reporting custodian and a controlling custodian. The reporting custodian (for example, a squadron maintenance office) is responsible for day-to-day maintenance (for example, current status of an engine). The controlling custodian has cognizance over where a specific item, or group of items, may be efficiently deployed to meet a tactical requirement.

The Organization Information window enables the user to display and query organizational information for a controlling activity and determine the interrelationships with support (lower level) activities.

**Mission Specific Changes:** CMIS tracks mission requirements (that is, permissible configurations) that are identified for a CI and are tied to an engineering design structure. A configuration code identifies the allowable changes to the physical make-

up of a CI to meet the requirements of a specific mission. The date effectivity for this mission-oriented change is also identified.

**Action Identification:** The Related Information (RI) links in CMIS allow for rapid identification of part removal and installation actions against a platform or end-item resulting from maintenance actions.

**Life Usage:** The CMIS Life Usage function tracks and maintains derived life usage measurements that have been defined by engineering documentation, the part manufacturer, or a part's position within a hierarchical structure. These Life Usage Indexes (LUI) identify the unit of measurement that is being reported by the manufacture-cited requirements. Accumulated usage data is gathered during installations, removals, and routine operations reporting.

CMIS life usage tracking accommodates usage adjustments necessitated by erroneous data entries and penalties assessed to account for loss of automated data caused by equipment failure or human error. Adjustments include the date of the adjustment, the adjusted value, and free text remarks to give greater detail and justification for the change. Penalty adjustments are defined by date assigned, total value of the penalty, and type penalty indicator. Additionally, the penalty can be assigned to an end-item, component, or assembly.

**TDP Validation:** CMIS manages the engineering data that defines the documents contained in the TDP, including product drawings, specifications, standards, packaging documents, and approved ECPs. Replenishment part breakouts can be verified and status codes for each document in the package can be assigned. CMIS tracks components and sources for items, including only those items available only from restricted sources. A complete audit trail is maintained for restricted source data changes. Any documents within the TDP that call for the use of HAZMAT, such as ozone depleting substances, are flagged for replacement or another action. When the package is complete and correct, the frozen baseline capability provides the tool to record this product baseline. This process will help users to reduce lead-time and costs by making the right decision to reprocur an item or to wait until pending changes are incorporated before reprocurement.

**Reports:** CMIS manages the engineering data that defines the documents contained in the Technical Data Package (TDP), including product drawings, specifications, standards, packaging documents, and approved ECPs. Replenishment part breakouts can be verified and status codes for each document in the package can be assigned. CMIS tracks components and sources for items, including only those items available only from restricted sources. A complete audit trail is maintained for restricted source data changes. Any documents within the TDP that call for the use of HAZMAT, such as ozone depleting substances, are flagged for replacement or another action. When the package is complete and correct, the frozen baseline capability provides the tool to record this product baseline. This process will help users to reduce lead-time and costs

by making the right decision to re procure an item or to wait until pending changes are incorporated before reprocurement.

CMIS provides the following standard reports:

**Ad Hoc SQL Queries:** The purpose of the Structured Query Language (SQL) is to provide the System Administrator (SA) additional database flexibility to retrieve data from one or more tables for special reporting needs.

**Oracle Referential Integrity Database:** Referential Integrity (RI) enforces data integrity through the database versus the application code. CMIS V5.1 incorporates RI to ensure data from interfaces comply to the same edit criteria as data entered via the GUI. The use of RI improves application performance because the number of SQL calls across the network and the size of application programs are reduced. Reliability of data integrity is increased with the use of the Oracle Commercial Off-the-Shelf (COTS) product, which has undergone extensive testing and use.

The benefits of moving Referential Integrity enforcement to the CMIS database in Version 5.1 allows several applications to access and update data in the database. Therefore, controls must be in place to ensure data integrity. This is best accomplished by implementing RI enforcement in the CMIS database, rather than the individual applications and interface.

## APML ROLE –

- Contact CMIS POC for application and use of CMIS tool for the system program
- Aware of CMIS baseline data identification and application to OOMA baseline establishment and sustainment.

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1.8	CMIS Help Desk, <a href="mailto:CMIS-Help@ingr.com">CMIS-Help@ingr.com</a>	NAVAIR HQ	(240) 725-5231
	CMIS, <a href="#">CMIS Business Marketing Team</a>		(240) 725-5249
	CMIS P/M, <a href="#">CMIS Program Manager</a>		(301) 757-8785

**REF** - See document at Web site below

## LINKS –

<https://www.nalda.navy.mil/cmis/>

Logistics Tool Box

<https://www.nalda.navy.mil/cmis/index.htm>

Logistics Tool Box

<https://www.nalda.navy.mil/apmlms/library.html>

Logistics Tool Box

## F-3 – TECHNICAL DIRECTIVES (TDS) / BULLETINS / RED STRIPES

**WHO** – NAVAIR: PAX: 00, 3.0, 3.1, 3.1.8, 4.1, PM, APML, APMSE, FST, TYCOMs, Prime Contractor

**WHAT** – Technical Directives are the only authorized medium for directing the modification or the accomplishment of one-time inspections of Naval aircraft and associated equipment. (NAVAIRINST 5215.12)

**Types:** Formal, Interim, Rapid Action Minor Engineering Changes (RAMEC) and Bulletins

**Red Stripes:** Memorandum used to communicate urgent issues determined by the Commander Naval Air Systems Command (COMNAVAIR) as appropriate for expeditious transmission to the Chief of Naval Operations and the Secretary of the Navy. (NAVAIRINST 5216.11B)

**WHY** – Naval aircraft and associated equipment are to be maintained in a configuration that ensures safety and affordable material readiness.

**WHEN** – Use TDs to: (see NA 00-25-300)

- Authorize and direct incorporation of approved retrofit changes
- Issue direction for one-time inspections and for precautionary instructions regarding personnel safety and equipment limitations.
- Provide detailed instructions necessary to perform inspections or install retrofit changes and to report/record compliances.
- Provide the official record of inspections and retrofit changes for purposes of technical directive status accounting.
- Respond rapidly to safety or urgent operational requirements to incorporate retrofit changes.
- Expeditiously implement minor (self-help) changes requested by the fleet or NAVAIR Fleet Support Teams (FST).

**WHERE** – NAVAIR: PAX: 3.1, 4.1, PM, APML, APMSE, FSTs, TYCOMs, Prime Contractor

**HOW** – NAVAIR 00-25-300 provides policy and associated references for the TD system and its application to Naval aircraft and associated equipment.

Red Stripes should be accomplished IAW NAVAIRINST 5216.11

## APML ROLE –

- Communication with the fleet is key to successful TD requirements and execution.
- Adhere to policies and processes
- See NA 00-25-300, Section II, para2.7, page 7 for specific APML responsibilities.
- Contact AIR 3.1.8 for the TD course, Naval Technical Directives System Expertise Development (NTDSED).

## POC -

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1.8			

## REF –

NAVAIR 00-25-300, March 2002, Naval Air Systems Command Technical Directives System, Management and Procedures Manual

NAVAIRINST 5216.11, Red Stripe Memorandum System

NAVAIRINST 5100-11 Engineering Technical Review of Risk Process and Procedures for Processing Grounding Bulletins

## LINKS –

<https://www.nalda.navy.mil/>

Logistics Toolbox, click on Documentation, then NAVAIR Instructions and Notices for NA 5216.11 or click on Tech Manuals to go to NATEC website for NA 00-25-300

<http://www.natec.navy.mil/>

Go here direct for NA 00-25-300

<https://directives.navair.navy.mil/>

Search for NAVAIRINST 5100.11

## APPENDIX G

# PERFORMANCE BASED LOGISTICS

### Table of Contents

G-1 - PERFORMANCE BASED LOGISTICS (PBL) & DIRECT VENDOR DELIVERY (DVD) & COMMERCIAL SUPPORT (CS)

-

## **G-1 - PERFORMANCE BASED LOGISTICS (PBL) & DIRECT VENDOR DELIVERY (DVD) & COMMERCIAL SUPPORT**

**WHO** – OSD, ASN, OPNAV (N-78, N-43, HQMC), NAVAIR, PEO, PM, APML, APMSE, NAVICP, TYCOM, Prime Contractors/Vendors

### **WHAT –**

#### ***Performance-Based Logistics (PBL):***

- A Long Term Agreement Where the Provider (Commercial, Organic, or Public-Private Partnership) Is Incentivized and Empowered to:
  - Meet Customer Oriented Performance Requirements (Reliability, Availability, Etc)
  - Improve Product Support Effectiveness
  - Reduce Total Ownership Costs
- The Following Are Examples of the Functions That May Be the Responsibility of the Provider:
  - Requirements Determination
  - Engineering and Technical Services
  - Configuration Management/Control
  - Technology Insertion
  - Obsolescence Management
  - Transportation
  - Warehousing
  - Retrograde Management
  - FMS Support (If Applicable)
  - Public/Private Partnerships or Teaming

***Direct Vendor Delivery (DVD):*** A procurement technique to provide large volume commodity items more efficiently and economically direct to the end user. DVD includes;

- Item Management
- Transportation Management
- Field Service
- Repair/Overhaul
- Sustaining Engineering
- Technology Insertion
- Configuration Management (Form, Fit, and Function)
- Technical Manuals and Updates
- Warehousing
- Inventory Management
- Reliability Analysis
- Product Improvements (aimed at reduced TOC)

**Commercial Logistics Support (CLS):** A support and sustainment strategy, in which a contractor provides all maintenance, material management and associated support elements for a system. CLS strategies include;

- Virtual Prime Vendor (VPV)
- Direct Vendor Delivery (DVD)
- Prime Vendor Support (PVS)
- Total System Performance Responsibility (TSPR)

#### **WHY –**

- Aging weapon systems
- Declining parts inventories and infrastructure
- Rising Cost of ownership
- Increased customer expectations

#### **PBL Helps to Achieve CNO Top Priorities/Goals:**

- Manpower- Increased Availability and Reliability Will Lower MMH/CANNs, Enhancing Fleet Quality of Life and Morale
- Readiness- Availability Commitment at High Percentage
- Future Readiness- Availability Commitment/Reliability Growth
- Quality of Service- Lower MMH, Increased Parts Availability, Premium Transportation and Field Reps for Assistance
- Alignment- Multi-Organizational/Multi-Competency IPTs Including OEM/Contractors With Common Goal
- Lower Life Cycle Costs
- Improves Readiness, FMC & MC Rates

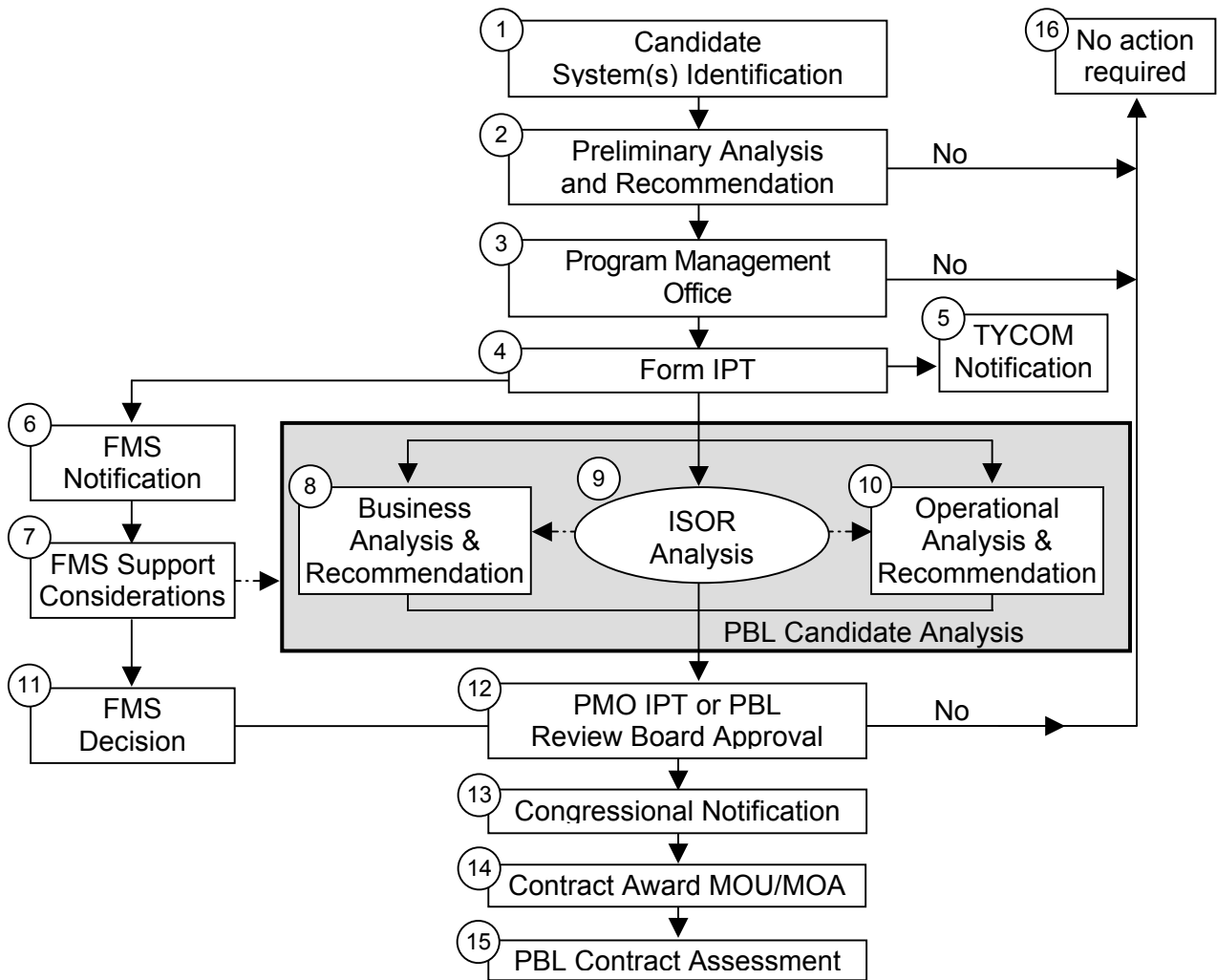
**WHEN –** Throughout system life cycle

**WHERE –** NAVAIR, Industry

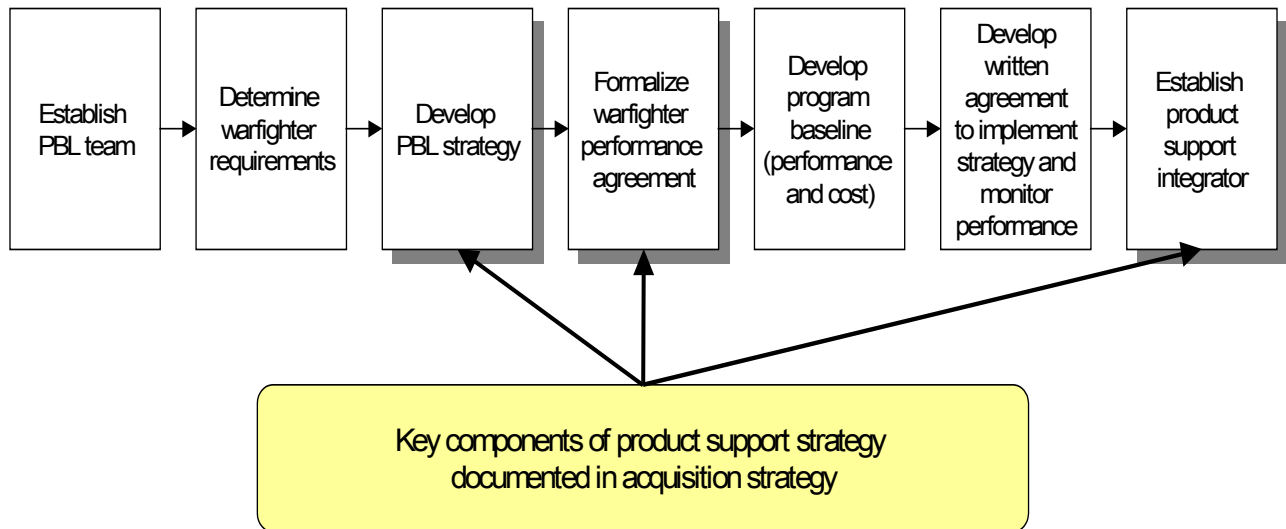
#### **HOW –**

- Contact the AIR-3.5 representatives for guidance and reference material upon embarking on a PBL, CLS or DVD initiative. (see PBL Training link)
- AIR-3.5 with NAVICP has established a framework for a myriad of alternative logistics approaches to embracing these initiatives.
- Figure below illustrates an example of the PBL process
- An example of an approach from the PBL Guide is provided below; (see links below)





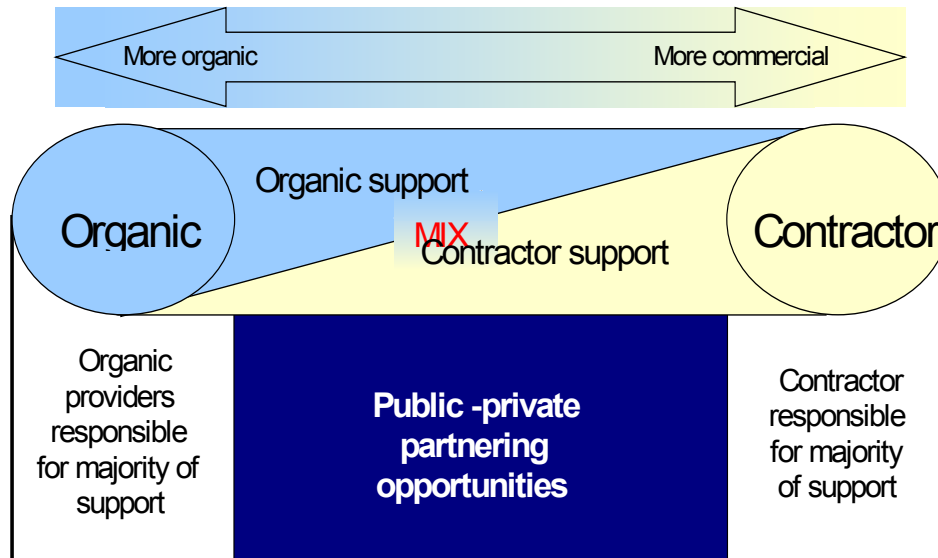
**The PBL Methodology:** The methodology can be applied to new, modified, or legacy systems.



### PBL Methodology

#### ***Developing the PBL Strategy:***

- Developing a strategy includes; (illustrated below)
  - Considering the needs of the warfighter
  - The cost of the weapon system both in its development and during its operational life cycle
  - The state of technology
  - Capability of industry to produce the system



*PBL strategies driven by MOUs with the warfighters will vary along this spectrum depending on:*

- Age of system (phase in life cycle)
- Existing support infrastructure
- Organic and commercial capabilities
- Legislative and regulatory constraints

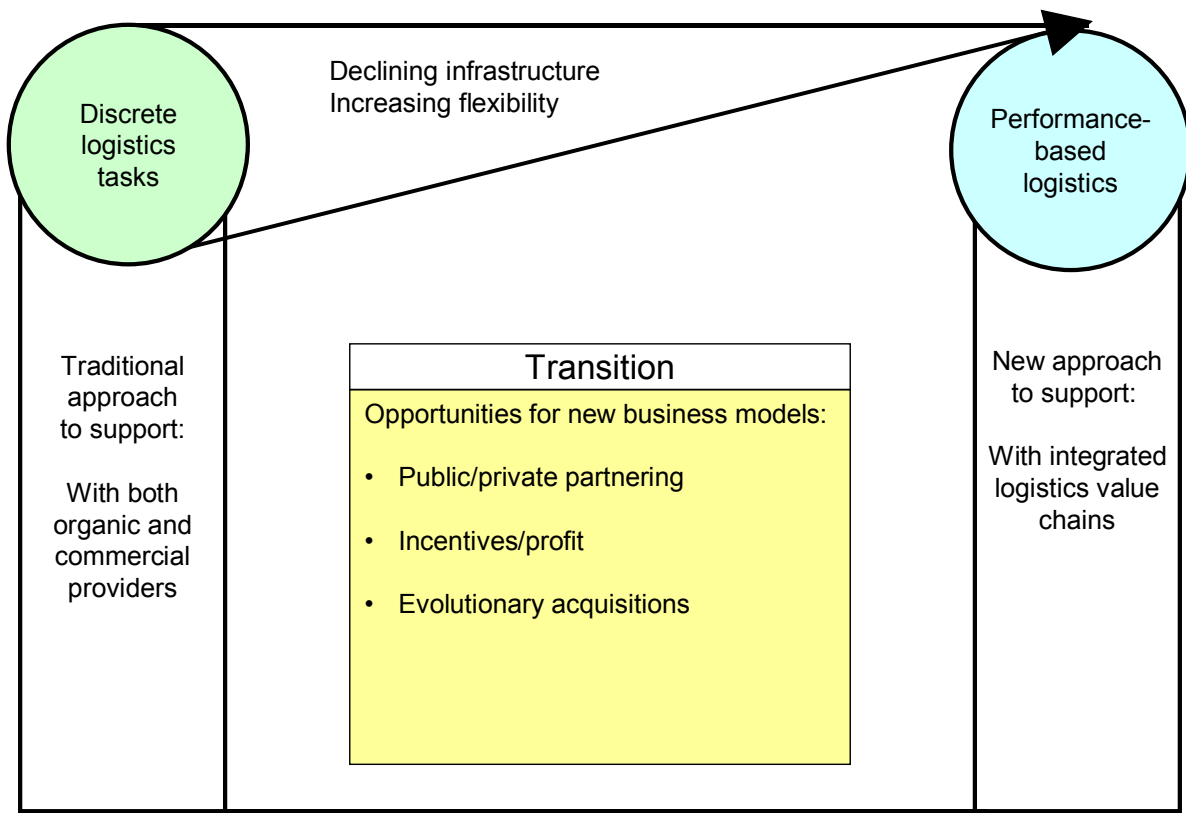
Examples of partnering agreements:

- Total system performance responsibility
- Government/industry partnering
- Service level agreements
- Performance -based agile logistics support
- Prime vendor support
- Contractor delivery system

## Spectrum of PBL Strategies

### ***Making the Transition:***

- Illustrated below are the factors affecting the transition of a weapon system or an entire mission area to PBL.
- Transition does;
  - Not necessarily mean logistics support moves from organic DoD providers to industry providers
  - It does mean business relationships that are structured to meet the warfighter's performance requirements may be different from relationships of the past.
- There is no one-size-fits-all approach to PBL. Several programs have started the move to PBL under initiatives designed to meet the programs' specific requirements
- Each program has tailored the PBL application to its unique circumstances taking into account cost, schedule, or product integrity to meet warfighter capability.



**Transition to PBL**

**APML ROLE** – Employ PBL metrics and methods of product support management and contracting that will motivate product support providers (government and industry) to increase availability and reliability of weapon systems through technology insertion and improved processes and to reduce total operation and support (O&S) cost.

**PBL Examples (NAVICP):** <http://www.navicp.navy.mil/search?NS-search-page=results>

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.5.3			(301) 757-9183
AIR-3.2			(301) 757-9109
AIR-3.5.2			(301) 757-9177/9183/9110/9169/9185

### REF –

NAVAIR 4081.2 PBL (being updated)

MIL-HDBK-502 Acquisition Logistics Handbook (ALH)

DEPSECDEF Memo, Defense Acquisition, dtd 30 October 2002

SECNAVINST 5000.2B Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs

U.S. Code: Title 10, Chapter 146

NAVAIR—Maintenance Trade Cost Guide

NAVAIR—Contracting for Supportability Guide

NAVAIRINST 4081.2 Policy Guidance for Alternative Logistics Support Candidates

FY2001 DoD Logistics Strategic Plan, August 1999

### LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

[Performance Based Logistics \(PBL\) Overview / APML Training 21 May 2002](#)

<https://www.nalda.navy.mil/apmlms/library.html>

Logistics Tool Box

<https://www.nalda.navy.mil/flexguide1.doc>

Logistics Tool box

<https://www.nalda.navy.mil/3.6.1/alh.html>

Logistics Tool Box

<http://www.pmcop.dau.mil/pmcop/kcontributions/perfbasedguide.PDF>

Program Management Community Program (PMCoP)

<http://log.dau.mil/psg-toc.asp>

Defense Acquisition University – Logistics Management Resource

<http://www.nalda.navy.mil/3.6/coo/>

Logistics Tool Box

<http://www.acq.osd.mil/log/lsp/lsp.htm>

[http://uscode.house.gov/title\\_10.htm](http://uscode.house.gov/title_10.htm)

Office of the Law Revision Counsel

<http://www.nalda.navy.mil/3.6.1/contract.html>

Logistics Tool Box

<https://directives.navair.navy.mil>

Instructions and Notices

<http://web1.deskbook.osd.mil/htmlfiles/TOC/003QVtoc.asp?Node=R&sNode=L2-4&Exp=Y>

JALB Report on Commercial Support of Aviation Systems

<http://classic.deskbook.osd.mil/reflib/DMULTI/006QV/001/006QVDOC.htm>

(PBBE) Integrated PBBE Guide; (Change 1 Incorporated); 23 May 1997

<http://classic.deskbook.osd.mil/reflib/DMULTI/004QV//004QVDOC.htm>

(PBBE) JACG Flexible Sustainment Guide; (Includes Change 2, July 1999)

<http://classic.deskbook.osd.mil/reflib/DMULTI/002QV/002QVDOC.htm>

(PBBE) Performance-Based Business Environment Products

[NAVAIR Acquisition Reform Information Center](#)

<http://www.navicp.navy.mil/business/longterm/h60/pbl/h60pws.htm>

Example of a PBL effort

# **APPENDIX H**

## **MAINTENANCE PLANNING**

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H-6 - ENVIRONMENTAL & HAZMAT PROGRAMS
H-7 - INTEGRATED MAINTENANCE CONCEPT (IMC)/FIXED PERIOD END DATE (PED)/FIXED DEPOT MAINTENANCE (FDM)
H-8 - MAINTENANCE PLAN
H-9 – LEVEL OF REPAIR ANALYSIS (LORA)/REPAIR LEVEL ANALYSIS (RLA)
H-10 – RELIABILITY-CENTERED MAINTENANCE (RCM)
H-11 – REPAIRABLES
H-12 - SUPPORTABILITY PLANNING AND ANALYSIS
H-13 – SOURCE, MAINTENANCE AND RECOVERABILITY (SM&R) CODES
H-14 – WORK UNIT CODES (WUC)
H-15 - USER'S LOGISTICS SUPPORT SUMMARY (ULSS)

## H-1 - AIRCRAFT BATTLE DAMAGE REPAIR

**WHO** – NAVAIR: PAX: CHPT/JAX/ NI/ATSUGI/NAPLES: Naval Air Depot, PM, APML, APMSE, IPTs, Prime Contractor

**WHAT** - Capability to accomplish rapid repair of battle-damaged aircraft in order to increase wartime system availability. Aircraft Battle Damage Repair (ABDR) is designed to quickly and accurately assess damage and restore minimum essential combat capabilities necessary to support a specific combat mission or to enable equipment to self-recover.

**WHY** - In the event of a conflict, combat aircraft are expected to receive some form of battle damage. Peacetime maintenance standards and repair criteria are designed to maintain/restore full life cycle capabilities. Such maintenance and repairs are time consuming and require significant resources. In the event of war, carrying out such repairs can lead to a shortage of aircraft available to the operational commander. Expedient unconventional repairs are required to meet wartime sortie requirements.

Wartime sortie requirements drive maintainers towards unauthorized repairs when approved ABDR procedures are unavailable.

**WHEN** - MS B and MS C, when design and analysis decisions can be made integrated with repair and maintainability considerations.

**WHERE** - NAVAIR: PAX: CHPT/JAX/ NI/ATSUGI/NAPLES: Naval Air Depot, Fleet Cite, Commercial Contractors

**HOW** - Procedures and methods to assess and repair battle damage are developed, assembled and provided in the form of a weapon system specific ABDR manual. Typically, allowable and repairable damage limits are increased, system degradation is allowed and repairs that deviate significantly from peacetime standards are authorized. Associated weapon system specific tooling and materials are identified and kitted as required.

**APML ROLE-** Ensure ABDR requirements are identified, budgeted, developed, delivered, and maintained to comply with the Operational Requirements Document (ORD), if specified.

Deliverables should include:

- A weapon system specific ABDR manual
- ABDR assessor and technician training
- Weapon system specific ABDR tools and materials kits



**POC -**

Note: Quite often, aircraft manufacturers/designers "re-invent the wheel" whenever a new ABDR initiative is started. Needless to say, it isn't appropriate for the Navy to expend funds developing information that may already exist. Consult with ABDR POCs to assess the availability of existing information and minimize duplicating efforts.

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.3.3		JAX	(904) 317-1554

**REF –** NAVAIR 01-1A-39

**LINKS -**

<http://www.bahdayton.com/surviac/>

Booze Allen Hamilton cite

<http://www.deskbook.osd.mil>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<http://www.natec.navy.mil>

Naval Air Technical Data and Engineering Services Center

## H-2 – COMPONENT TRACKING

**WHO** – NAVAIR, APML, APMSE, FSTs, NAVICP, Prime Contractor

**WHAT** - Information database for tracking, monitoring and managing age related engine and aircraft components.

**Examples: Periodic Maintenance Inspection Cards indicate Component Tracking (COMTRAK)/Engine Component Tracking (ECOMTRAK) application and reference**

<b>CARD</b> ii	<b>NAVAIR</b> 01-H1AAC-6 <b>DATE</b> 1 July 2001	<b>CHANGE NO.</b>		
<p align="center"><b><u>REMOVAL/REPLACEMENT SCHEDULE SPECIAL TRACKING REQUIREMENTS</u></b></p> <p>Items that have an approved mandatory removal/replacement interval shall be removed and replaced with serviceable items at the specified interval. Any deviation to removal schedules should be in accordance with OPNAVINST 4790.2. Replacement items are indicated in operating hours, calendar time, cycles or events, and arranged by aircraft, engine, and systems.</p> <p>Items preceded by asterisk (*) require a Scheduled Removal Component (SRC) Card (OPNAV Form 4790/28A). Assembly Service Record (ASR) items tracked by ASR Cards (OPNAV Form 4790/106A), Modular Service Record (MSR) items (items modular by design) tracked by MSR Cards (OPNAV Form 4790/135) and structural life limited items designated for depot are identified by notes in the remarks column. Refer to OPNAVINST 4790.2 series for additional information on history record tracking data.</p> <p><a href="#">Reference to COMTRAK</a></p> <p>An allowance of <math>\pm 10\%</math> is not authorized, unless otherwise noted, for pyrotechnics, cartridges, cartridge actuating devices, and components with a disposition of retire.</p>				
<b>CARD</b> 27	<b>NAVAIR</b> 01-H1AAC-6 <b>DATE</b> 1 July 2001	<b>CHANGE NO.</b>		
<b>NOMENCLATURE</b>	<b>PART/MODEL NUMBER</b>	<b>DISPOSITION</b>	<b>REMOVAL INTERVAL</b>	
<p align="center"><b><u>TURBOSHAFT ENGINES</u></b></p> <p><b>NOTE:</b> All T700 engine hardware listed is tracked with Aeronautical Equipment Service record (OPNAV Form 4790/29) and is included in the Navy Engine Component Tracking Program (ECOMTRAK).</p> <p><a href="#">Reference to ECOMTRAK</a></p>				
T700-GE-401 Turbo shaft Engine	6043T80G01	N/A	On-Condition	
Electrical Control Unit (ECU)	Assv (7130M70G03)	N/A	On-Condition (All)	NOTE 1. 6
Hvdro Mech Control Unit (HMU)	Assv (6038T62P22)	N/A	On-Condition	NOTE 1. 6.
Hvdro Mech Control Unit (HMU)	Assv (6038T62P25)	N/A	On-Condition	NOTE 1. 6.

**WHY** - To prevent a safety of flight condition to occur resulting in unnecessary operational restricting of aircraft and engine assets.

As engines and components reach age limits or when defects occur or are discovered, engineering decisions effecting readiness can be greatly reduced through the use of COMTRAK data.

When loss of component tracking cards (SRC, EHR, AESR, or ASR) occurs establishment of age related data through COMTRAK/ECOMTRAK has saved millions in parts savings and man-hours that would otherwise be spent in parts replacement by the Fleet.

At phase out of engines and aircraft COMTRAK can be used to determine best candidates for RILOP to support the remaining fleet by recycling the items.

COMTRAK provides a configuration snapshot of age related aircraft/engines, major assemblies, components and sub-components to the fourth level of indenture when maintained properly.

**WHEN** - Items are identified and life limits established early in the design process and refined as a result of flight-testing, fatigue analysis and operational experience during the life of the items.

**WHERE** - NAVAIR, PM, APMSE, Prime Contractor

**HOW** - All life-limited items are identified, approved, and published in the Periodic Maintenance Inspection Cards (PMIC) by specific aircraft and engine. These items are entered into the COMTRAK / ECOMTRAK database and maintained over the life of the items. COMTRAK / ECOMTRAK data is used by the Fleet Support Team for in service engineering and logistics management requirements i.e. analysis, tracking, location by TEC, and age information as well as configuration of the items.

**APML ROLE –**

- Ensure system component tracking requirements identified
- Initiate or ensure interface with COMTRAK POC for application of system requirements planning, budgeting and sustainment execution if chosen as management tool
- Ensure system changes impacting COMTRAK data are provided to ensure current information used in managing system component requirements
- Ensure COMTRAK data is applied in cases of missing component history records before discarding of life limited items

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
	COMTRAK Coordinator	NADEP Cherry Point, NC	(252) 464-8989
	FST Lead for Engines, A/C or Equip.		

**REF** - Periodic Maintenance Inspection Cards by TEC / TMS for COMTRAK / ECOMTRAK requirement.

**LINKS –**

<http://www.nalda.navy.mil>

Logistics Tool Box

## H-3 – DEPOT DETERMINATION

**WHO** – PM, APML, NAVAIR: PAX: 6.1, 6.4

**WHAT** – Identifying industrial sources, organic and or commercial including combinations, for maintenance or repair requiring overhaul, upgrading or rebuilding. Depot level maintenance includes organic Naval Aviation Depots (NADEPs), commercial activities, combination of commercial and organic, and inter-service activities.

**WHY** –

- Title 10 U.S.C. 2464 and DoD policy require organic core maintenance capabilities.
- These statutory and regulatory requirements ensure the necessary elements for planning designing, programming, budgeting, implementing and maintaining are identified with procedures for enactment to provide for depot level maintenance management and to ultimately provide the necessary industrial capacities and capabilities to fully support a weapon system throughout its life cycle.

**WHEN** – Requirement begins with Phase A thru the activation of the depot and continues throughout the life cycle of the weapon system as evolutionary and spiral enhancements are planned and implemented. See attached life cycle phase attachment.

**WHERE** – NAVAIR, IPTs, Prime Contractor

**HOW** –

- Pre-Phase A, Analysis of Alternatives and supportability analyses form the initial considerations and options (commercial and organic needs and options considered)
- Phase A and subsequent phases analyses define further the requirements and strategy based on a mature system concept (system decision and early support strategy define decisions for depot capability)
- Maintenance planning and supportability analyses (FMECA, LORA, RCM, Commercial item designation) provide the basis for depot determination decisions
- Core/ Non-Core must be determined through the Industrial Source of Repair (ISOR) process. **See attached ISOR Process flow chart**
- Final recommendations must be briefed through the acquisition chain (IPMB, NAVAIR, PEO, ASN, DDMC and Congress) for justification review and concurrence.
- Final decisions will require various courses of action and process implementation based on the source of depot support.

**APML ROLE –**

- Early IPT influence with supportability analyses results and maintenance concept strategy
- Early Commercial item determination and or commercial repair decisions result in cost avoidances that will effect life cycle support costs.
- Once decisions are made initiate IPT action to develop necessary implementing documentation.
- Initiate organic processes for product support requirements to establish and sustain organic depot items
- Statutory requirements dictate Core Depot logistics capability be in place 4 years after IOC for the system.
- Include strategy, planning and concept in ALSP

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-6.1	Industrial Operations	NAVAIR HQ	

**REF –**

OPNAVINST 4790.14A / AMC-R 750-10 / AFI 21-133(I) / MCOP4790.10B / DLAD 4151.16, Joint Depot Maintenance Program

U.S. Code Title 10, Sections 2464, 2466, 2469 (10USC2464, 10USC2466, and 10USC 2469)

NAVAIR/NAVICP Draft INSTRUCTION 4XXX.Y, Determining Depot-Level Industrial Source of Repair (ISOR)

DEPSECDEF Memo dtd 30 October 2002

**LINKS -**

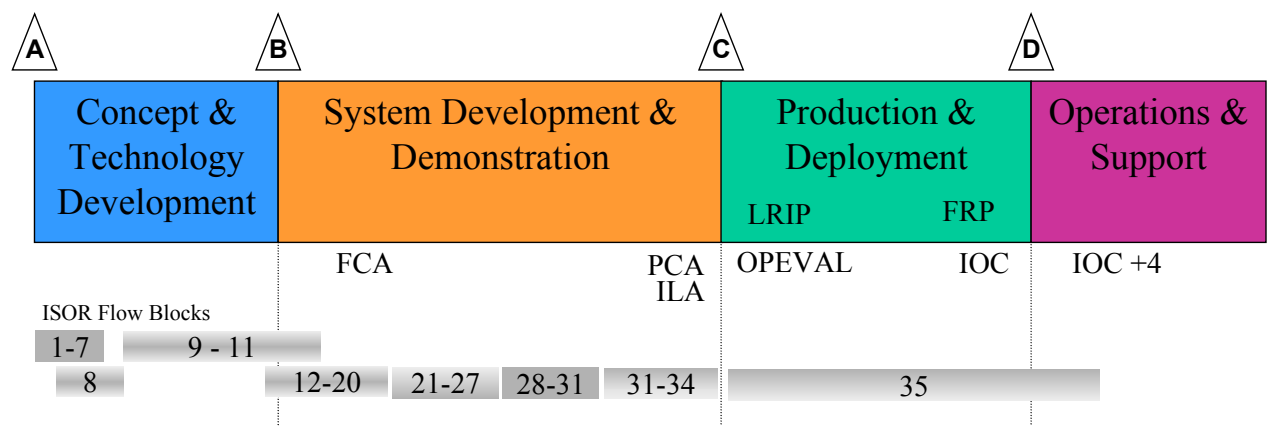
<http://www.deskbook.osd.mil>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<http://dod5000.dau.mil/>

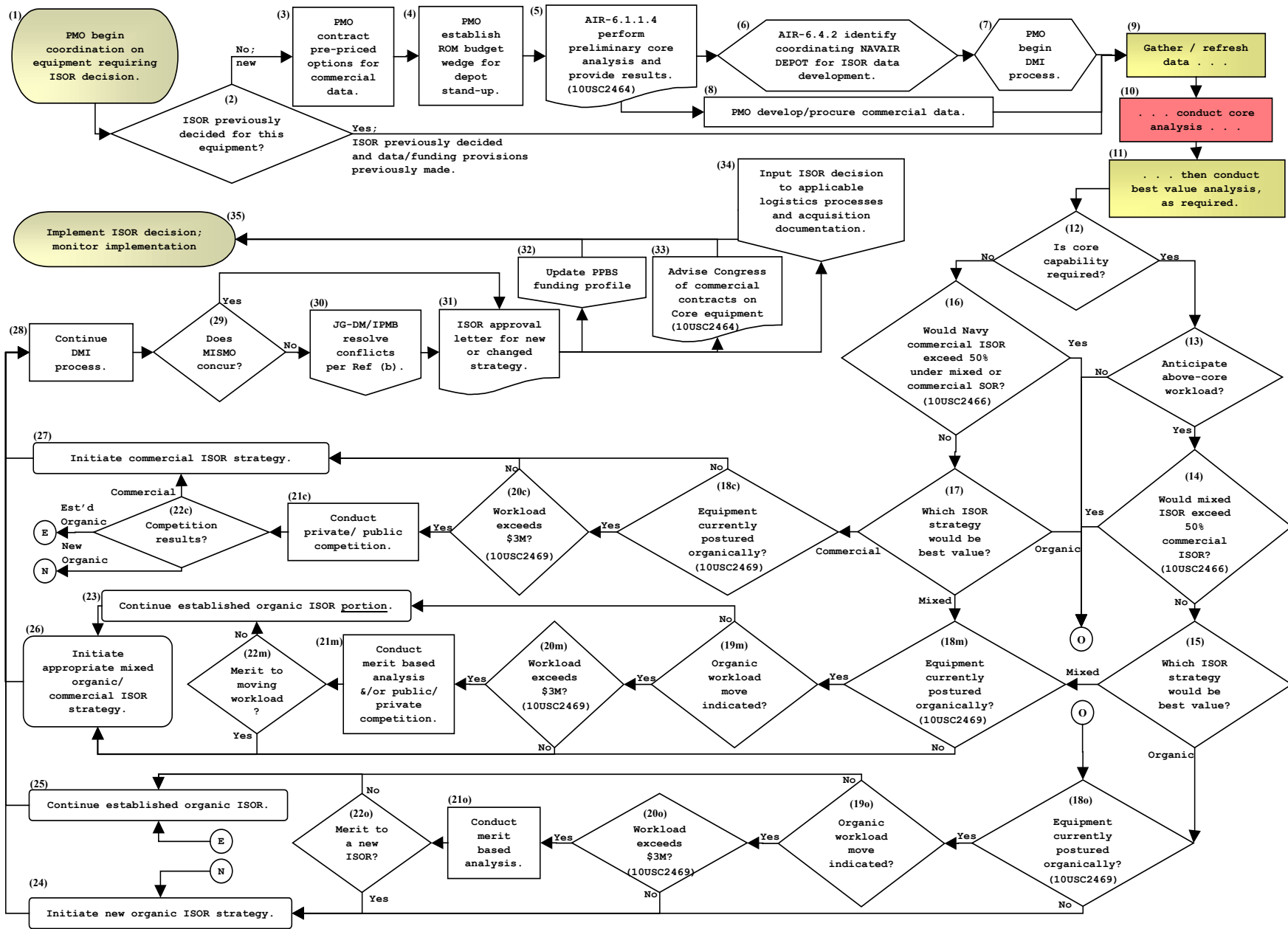
New DoD 5000 Resource Center

# ISOR / DOD 5000 Overlay for new equipment



If a program is accelerated under acquisition reform initiatives, all of the ISOR blocks preceding the appropriate milestone will need to be completed to ensure a properly coordinated and funded strategy is selected.

H-34





## H-4 - DESIGN CHANGE NOTICE (DCN)

**WHO** – APML, NAVICP, Prime Contractor

**WHAT** – Formal document prepared by a contractor or government activity to notify the provisioning activity of a design change. (can be automated or manual)

**WHY** –

- The information provided on the DCN is crucial to establishing a new configuration that reflects its intended use on the weapon system
- Includes associated engineering data (drawings)
- Engineering data provides identifiable characteristics associated with National Stock Number (NSN) items
- These characteristics are mandatory logistic/technical data requirements governed by DOD cataloging policy
- Data extracted from the DCN and associated technical data will reside in the Defense Logistics Information Services (DLIS) data repository
- Additional data will reside in the NAVICP-P Master Item File (MIF), including non-stock numbered items.

**WHEN** –

- Once the ECP has been approved by NAVAIR or the approving authority.
- The DCN preparation activity has been directed to proceed with DCN development as a result of the contract mod being signed

**WHERE** – IPTs, NAVICP, Prime Contractor

**HOW** – Make the DCN a contract deliverable, and include the 1423 citing the appropriate Data Item Description (DID).

**APML ROLE –**

- Ensure ECP DCN ground rules have been identified and agreed to within the IPT
- Ensure ECP package identifies DCN, if required, and a CDRL 1423 requirement is included in the contract.
- Ensure ECP schedule reflects DCN submittal
- Verify DCN reflects ICP data requirement
- Improve quality or process if required

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
		NAVICP Philadelphia, PA	(215) 697-6536 - DSN 442-6536

**REF –** Attached Manual Design Change Notice form.

**LINKS –**

<http://www.navicp.navy.mil/mdcn/mdcn.htm>

Naval Supply Systems Command, Inventory Control Point

Synopsis of DCN Preparation Support Data

**MANUAL DESIGN CHANGE NOTICE**

CONTRACTOR/GOVERNMENT AGENCY NAME AND ADDRESS				MODEL (S) OF AIRCRAFT OR EQUIPMENT				DCN NO.				DATE		DESIGN CHANGE REF. NO.											
												PAGE      OF													
1. ITEM STATUS <input type="checkbox"/> SUPERSEDED ITEM <input type="checkbox"/> ITEM LIMITED NOT SUPERSEDED <input type="checkbox"/> DELETED ITEM								1A. ITEM STATUS <input type="checkbox"/> SUPERSEDING ITEM <input type="checkbox"/> ADDED ITEM <input type="checkbox"/> ALTERNATE ITEM																	
2. NATIONAL STOCK NUMBER (NSN)						3. INTENTIONALLY BLANK		2A. NATIONAL STOCK NUMBER (NSN)						3A. INTENTIONALLY BLANK											
4. PART NUMBER (Incl. CAGE CODE)				5. REFERENCE DESIGNATION				4A. PART NUMBER (Incl. CAGE CODE)				5A. REFERENCE DESIGNATION													
6. NOMENCLATURE								6A. NOMENCLATURE																	
7. SOURCE CODE		8. MRR/MRF		9. ORR		10. RRR		11. M&RC		12. QUP/PRES METHOD		7A. SOURCE CODE		8A. MRR/MRF		9A. ORR		10A. RRR		11A. M&RC		12A. QUP/PRES METHOD			
13. ALLOWANCE LIST/TABLE QTY.				14. USE ON CODE				15. SHELF LIFE				13A. ALLOWANCE LIST/TABLE QTY.				14A. USE ON CODE				15A. SHELF LIFE					
16. INTENTIONALLY BLANK				17. EST. BUDGET UNIT PRICE				18. DRAWINGS ATTACHED <input type="checkbox"/> YES <input type="checkbox"/> NO				18A. <input type="checkbox"/> VENDOR PPB REQUIRED <input type="checkbox"/> OTHER				16A. INTENTIONALLY BLANK				17A. EST. BUDGET UNIT PRICE					
19. BITS AND PEICES DATA  <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D				20. INTENTIONALLY BLANK				21. INTERCHANGEABILITY DATA  <input type="checkbox"/> NOT INTERCHANGEABLE <input type="checkbox"/> TWO WAY INTERCHANGEABLE <input type="checkbox"/> ONE WAY INTERCHANGEABLE								22. INTENTIONALLY BLANK									
<b>CONTRACT APPLICATION</b>																									
23. CONTRACT NUMBER		24. ITEM ORDER NUMBER		25. A. NEXT HIGHER ASSEMBLY NO. B. NEXT HIGHER REPAIRABLE ASSY. NO. (QTY. PROCESSED)		26. UNITS PER ASSY.		27. UNITS PER ACFT.		28. QUANTITY ORDERED		29. QUANTITY PRORATED		30. QUANTITY SHIPPED		24A. ITEM ORDER NUMBER		25A. A. NEXT HIGHER ASSEMBLY NO. B. NEXT HIGHER REPAIRABLE ASSY. NO.		26A. UNITS PER ASSY.		27A. UNITS PER ART		29A. QUANTITY PRORATED/ ORDERED	
				A. ( )														A. ( )							
				B. ( )														B. ( )							
				A. ( )														A. ( )							
				B. ( )														B. ( )							
				A. ( )														A. ( )							
				B. ( )														B. ( )							
31. REMARKS												31A. DISPOSITION OF SUPERSEDED PARTS  <input type="checkbox"/> USE UNTIL EXHAUSTED <input type="checkbox"/> SCRAP <input type="checkbox"/> MODIFY TO NEW CONFIGURATION													
32. INTENTIONALLY BLANK								32A. INTENTIONALLY BLANK				33. SIGNATURE (DCN PREPARER)				TELEPHONE NO.				DATE					
												34. SIGNATURE (NAVICP DCN PROCESSOR)				TELEPHONE NO.				DATE					

## H-5 - FLEXIBLE SUSTAINMENT (FS)

**WHO** – APML

**WHAT** – Flexible Sustainment (FS) is a process that encourages the use of performance-based specifications and to develop innovative, cost-effective, life cycle solutions.

**WHY** – Flexible Sustainment (FS) provides Program Managers (PM) with the opportunity to reduce life cycle costs in the following ways: (1) by conducting supportability analyses as part of the systems engineering process to implement the most life cycle cost-effective operational and support system; (2) by improving the reliability of existing systems and reducing operations and support (O&S) costs; and (3) by facilitating technology insertion throughout the life cycle. Implementation of FS initiatives will enable DoD components the opportunity to reduce life cycle costs and provide needed funds for modernization and recapitalization.

**WHEN** – Milestone B, updated before Milestone C and FRP Decision

**WHERE** – NAVAIR, IPTs

**HOW** – Supportability analyses, including comparison of commercial and organic cost-effective capability, should be conducted as an integral part of the systems engineering process. As DoD's role continues to shift from that of being a technology producer to being a technology consumer, program managers are likely to rely more on commercial products to meet the users' requirements. This requires Program Managers to ensure application of a rigorous system engineering process that incorporates open systems concepts and principles. It ensures delivery of systems that more readily accommodate commercial products whose design is not controlled by DoD and whose lifetimes are much shorter and more volatile than the systems they support. This effort needs to begin at program initiation and continue throughout program development (design for support). FS introduces two follow-on processes:

The first is Reliability Based Logistics (RBL), which suggests that increasing the inherent reliability of a system can result in significant reduction of the maintenance support structure. RBL is intended to assist the program managers in developing the best "design for support" solution.

The second is Trigger Based Asset Management (TBAM), which recommends assessment of fielded systems trends and a re-examination of the maintenance plan when "triggers" (such as changes in reliability or maintainability trends, a change in technology, or diminishing resources) are detected. TBAM is a cost-effective tool to enable the team to "support the design".

In addition to RBL and TBAM, other innovative support solutions, such as procurement of Form-Fit-Function-Interface (F3I) spares, performance warranties, and obsolescence assessment are presented as cost-effective support alternatives.

The following are extracts from Chapter 146, Title 10, USC Code, which relate to DoD depot maintenance support. The Flexible Sustainment approach should be implemented within the confines of these statutes.

10 USC 2461	Commercial or industrial type functions: required studies and reports before conversion to contractor support; 10 USC 2462. Contracting for certain supplies and services required when cost is lower;
10 USC 2463	Reports on savings or costs from increased use of DoD civilian personnel;
10 USC 2464	Core Logistics Functions;
10 USC 2466	Limitations on the performance of depot-level maintenance of material;
10 USC 2469	Contracts to perform workloads previously performed by depot-level activities of the Department of Defense: requirement of competition;
10 USC 2470	Depot-level activities of the Department of Defense: authority to compete for maintenance and repair workloads of other Federal agencies;
10 USC 2471	Persons outside the Department of Defense: lease of excess depot-level equipment and facilities by; P.L. 99-145, Section 1231. Core logistics functions subject to contracting out limitations; and
P.L. 103-335	Section 8057. Certification of costs in public-private competition.

**APML ROLE** - Section 1 of the Flexible Sustainment Guide provides background on Flexible Sustainment, defines terms, and describes benefits derived by implementing FS. Sections 2 and 3 of two major processes, RBL and TBAM provide the APML and his support personnel with proactive guidance, such as implementing an OS approach and focusing on Total Ownership Cost (TOC) when dealing with potential sustainment problems.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2		NAVAIR HQ	

**REF -**

(PBBE) JACG Flexible Sustainment Guide (Includes Change 2, July 1999)

DSMC Acquisition Logistics Guide Flexible Sustainment Guide (PDF format)

Section 26.4 Flexible Sustainment

**LINKS –**

<https://www.ascsy.wpafb.af.mil/SY-1/SYI/pbbe/pbbe.htm>

[www.dsp.dla.mil/sustainment/flexguide2.pdf](http://www.dsp.dla.mil/sustainment/flexguide2.pdf)

Defense Standardization Program Journal

## H-6 - ENVIRONMENTAL & HAZMAT PROGRAMS

**WHO** – NAVAIR, PM, APML, NAVICP, TYCOM

**WHAT** – The Environmental and Hazardous Material (HAZMAT) programs encompass the actions required to ensure that systems design, development, testing, evaluation, operations, and maintenance comply with federal, state, and local environmental laws, regulations, policies, treaties, and agreements. Programs have requirements that may introduce, continue to use, or modify hazardous material, including ozone depleting substances, that are part of a deliverable system or equipment or are required for operation/ maintenance of a system or equipment. Every weapon system program must address pollution prevention as an integral part of the systems acquisition process.

**WHY** – Although acquisition principles stress increased use of commercial practices and greater offeror flexibility in design and method of meeting Government performance requirements, you must conduct your program in accordance with applicable federal, state, interstate and local environmental laws and regulations. SECNAV INST 5090.1B and DoD Dir 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002), paragraph 4.3.7, Environmental, Safety and Health (ESH), requires all programs (regardless of acquisition category) to address the requirements in the five environmental and hazardous material management elements shown below. Environmental and HAZMAT is a part of the Logistics Assessment program required by SECNAVINST 4105.1, 30 May 96.

1. National Environmental Policy Act (NEPA) and Executive Order (EO) 12114
2. Environmental Compliance
3. System Safety and Health (See Safety)
4. Hazardous Material
5. Pollution Prevention

This will require you to develop and document a program strategy for conforming to ESH requirements as part of the acquisition documentation. Implementing this strategy will require you to conduct an ESH analyses, support development of the ESH evaluation and integrate resulting ESH issues into the system engineering process.

**WHEN** – Throughout the system life cycle

**WHERE** – NAVAIR, Fleet

**HOW** - If this is a R&D, Production, or maintenance contract, apply the following guidelines in preparing or reviewing the RFP. If it is a contract support services contract, there will be only limited application of environmental policies.

**Develop and document the strategy for managing the acquisition program's ESH effort.**

- State a requirement for the assignment of a full-time environmental manager (especially for ACAT I programs).
- State a requirement for the contractor to prepare a comprehensive ESH plan addressing all of the five ESH categories, with periodic revisions and updates.
- State a requirement, in Section L, for the contractor to prepare a Hazardous Material Management Plan (HMMP) in accordance with National Airspace Standard (NAS) 411.
- State a requirement for the application of the principles of Environmental Management Hierarchy to eliminate or reduce the impact and volume of pollutants.
- Ensure consistency between the performance specification, Sections L and M and the SOW or SOO with respect to environmental compliance and hazardous material management.

**Comply with all applicable codes, standards and regulations category. Maintain awareness of these changing regulations and establish a process for monitoring changing compliance requirements.**

- Include DFAR clauses on environmental requirements in Section I or Section H.
- State a requirement for early, full evaluation of environmental regulations and periodical reevaluation. Evaluate all upcoming program phases to identify future actions that may have NEPA and/or EO 12114 implications.
- State a requirement for a contractor mechanism for periodic review of new and/or changing environmental regulations, identifying environmental constraints imposed by compliance with those regulations.
- Call for compliance with environmental policies and specialized environmental impact statements called out in Status of Forces Agreements when US systems are or will be based abroad.
- Address the need to comply with national environmental impact requirements, depending on the country involved, in Foreign Military Sales (FMS) contracts
- Avoid specification of EPA 17 hazardous materials or ozone depleting substances.

**Perform the analyses required by NEPA and/or EO 12114.**

- Require the contractor to perform a detailed ESH analyses. This should include a requirement for an ESH review and evaluation process that addresses the entire system life cycle, as well as periodically updating the status for each planned analysis.
- Require the contractor to perform analyses to identify.
- ESH hazards.
- Support requirements associated with using hazardous materials.



- Cost-effective pollution prevention programs.
- Require the contractor to develop a milestone plan for the timely completion of each planned analysis.

**Things to look for:**

- The existence of a comprehensive ESH plan addressing all of the five ESH categories.
- RFP/SOW requirements which require detailed ESH analyses.
- RFP/SOW requirements for contractor to perform analyses which identifies ESH hazards.
- Identification of environmental constraints imposed by compliance with regulatory requirements.
- Requirements for the performance of analyses which identify support requirements associated with using hazardous materials.
- Requirements for the performance of analyses which will result in the identification of cost-effective pollution prevention programs.
- Evidence of early full evaluation of environmental regulations and periodical reevaluation.
- Assignment of a full time environmental manager (especially for ACAT I programs).
- Evidence of the existence of a ESH review and evaluation process which addresses the entire system life cycle.
- Evidence of a funded source reduction program to recognize and avoid the creation of pollutants.
- Evidence of the application of the principles of Environmental Management Hierarchy to eliminate or reduce the impact of pollutants.

**Things to beware of:**

- ESH plan that does not address each of the above five components.
- ESH plan illustrating lack of coordination among the five components.
- Requirements for an initial ESH plan with no planned revisions or updates.
- Requirements for, or existence of, an ESH plan filled with the "right" words lacking depth.
- Possibility of US system based abroad. Such deployment is governed by "Status of Forces Agreements" which may have different, specialized environmental impact requirements.
- Possibility of FMS. Depending on country involved, these will have different environmental impact requirements - all of which must be met.
- Lack of identification of a program mechanism for periodic review of new and/or changing environmental regulations.

**APML ROLE –**

- Interface with program Environmental IPT lead for specific system program planning and requirements.
- Ensure ALSP identifies appropriate requirements for HAZMAT and support contracts reflect statutory and regulatory policies and requirements for adequately addressing all elements

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2E	Environmental/Hazard	NAVAIR HQ	(301) 757-2650

**REF -**

- DoD Dir 5000.2-R (use as Interim Defense Acquisition Guidebook per DEPSECDEF Memo Dtd 30 Oct 2002), paragraph 4.3.7, Environmental, Safety and Health (ESH)
- SECNAV INST 5090.1B
- SECNAVINST 4105.1
- Wright-Patterson AFB Source Selection Guide Appendix E-26, Environmental Hazardous Materials Management Program.

**LINKS -**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.abm.rda.hq.navy.mil/>

ASN (RDA) Acquisition & Business Management (ABM) Environmental Checklist

<http://206.5146.100/enviroweb/index.html>

Environmental & Safety, Deputy Assistant Secretary of Navy

<http://asnrdac.acq-ref.navy.mil/abm/secnav5400.html>

Environmental Considerations in the Acquisition Process, SECNAV Note 5400

<http://web2.deskbook.osd.mil/reflib/mdod/031dr/031drdoc.htm>

Environmental, Safety and Health (ESH), Dir 5000.2-R, paragraph 4.3.7, Department of Defense (DoD)

Hazardous Material Management Program, National Airspace Standard 411

<http://web.deskbook.osd.mil/reflib/ddon/003oh/001/003oh001doc.htm>

Logistic Assessment Handbook, (N432D Memo, 21 January 1997)

<http://www.ccq.eh.doc.gov/nepa/regs/nepa/nepaegia.htm>

National Environmental Policy Act (NEPA) and Executive Order (EO) 12114

## **H-7 - INTEGRATED MAINTENANCE CONCEPT (IMC) / FIXED PERIOD END DATE (PED) / FIXED DEPOT MAINTENANCE (FDM)**

**WHO** – OPNAV, HQMC, NAVAIR, APML, APMSE, TYCOM, Fleet

**WHAT** – All aircraft, both currently fleet deployed and future acquisition, must have a fixed Period End Date for scheduled Depot rework. Aircraft that are currently in the fleet must transition from the traditional ASPA/SDLM concept to a scheduled fixed induction. The original purpose of IMC was to develop, and transition to, a fixed Period End Date (Depot Induction) for existing aircraft and to ensure that new aircraft. New aircraft should have a fixed depot induction schedule at acquisition, and address this issue when developing their maintenance plans.

**WHY** – There are six potential benefits to be achieved through the implementation of a Fixed Depot Induction, or the Integrated Maintenance Concept transition, for a weapon system. They include:

- Minimize aircraft out-of-service time and optimize aircraft availability
- Decreased Maintenance Man-hours per Flight Hour (MMH/FH)
- Improve Aircraft material condition
- Relief of the pressures associated with reductions in Fleet maintenance personnel
- Minimized duplication of efforts and reduced material requirements across O/I/D levels
- More accurate forecasts of aircraft material conditions, availability, and required maintenance resources (Budgetability of Rework Dollars).

**WHEN** – Since the APML must ensure the most cost effective means of providing weapon system maintenance, the APML should schedule the assessment of weapons system maintenance downtime/operational availability factors, maintenance/failure data analysis, Maintenance Plan analysis, maintenance requirements analysis, and the results of Reliability Centered Maintenance program implementation, to identify the optimum candidates for the performance of the IMC/FIXED PED analysis and implementation that would incorporate the potential benefits of IMC/FIXED PED for that weapon system and achieve optimum operational capability at earliest date.

**WHERE** – NAVAIR, FST, Fleet cites, Prime Contractor

**HOW** – To Transition from Legacy ASPA/SDLM concept to IMC/Fixed PED, The Airframes Management Board (AFMB) is a resource that the APML must consider in developing the level of detail to schedule the IMC/Fixed PED analysis. The APML must anticipate a substantial number of implementation issues to arise. The APML must analyze the complexities associated with this task to identify the potential issues/problems shown in Figure 1. The IMC HANDBOOK (NAVAIR 00-XXX located

on the IMC Web page) contains all the required checklists and guidance in order to prepare an accurate package.

**\*\* Communication with AIR 3.2 representatives is vital.**

### APML ROLE –

- Ensure new systems incorporate intent and benefits of IMC in early planning, consult AIR-3.2 representatives for IMC application, sustainment and management advice and guidance
- Ensure initial turnover includes IMC program overview for execution, management and sustainment requirements

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2/AIR-6.1	Airframes Management Board	NAVAIR HQ	
AIR-3.2	Platform Rep	NAVAIR HQ	

### REF –

NAVAIRINTS 4790.33A

NAVAIR 00-XXX IMC GUIDEBOOK

### LINKS –

<https://www.nalda.navy.mil/3.2/rcm>

Logistics Tool Box

<https://www.nalda.navy.mil/3.2/imc>

Logistics Tool Box

POTENTIAL PROBLEMS	PROPOSED SOLUTIONS
Ensuring that the structural integrity of aircraft will be maintained	Immediately involve AIR 4.3 as part of Integrated Product Team (IPT) to participate in up-front process; use AIR 4.3 expertise to obtain valid Aircraft Service Period Adjustment waivers, if required.
Identifying all risks if policy issues, Depot capacity, funding shortfalls, or other unanticipated problems constrain the planned FIXED PED/IMC transition/implementation	Vigorously and constantly review lessons-learned from other platform Program Offices and institute solutions where appropriate.
Changes causing union negotiations/approvals to occur	Ensure representation by AIR 6.0 on IPT. Research and understand union agreements up-front.
Justifying and obtaining required funding if implementation exceeds budgeted funds for performing current scheduled maintenance program	Examine funding profile over long-term vice short-term. Account for residual savings associated with doing Engineering Change Proposals/Technical Directives during scheduled maintenance periods (less maintenance actions and more availability).
Ensuring the availability of adequate facilities, SE, tooling, Non-Destructive Inspection (NDI) capability/capacity, material, spare pool components and other items to support prototyping, and implementation	Perform comprehensive site surveys to find a suitable location for prototype. Involve site personnel in IPT process.
How will personnel management/on-site supervision, quality assurance, Hazardous Material (HAZMAT) use/reporting and task scheduling be handled in a multiple-organization work environment?	Develop Standard Operating Procedures for performance of validation and include training.
Resolving Title 10 Sections 2464, 2466 and any other applicable section compliance issues	Involve AIR 6.0 and cognizant depot in IPT process.
Assessing the need for Environmental Impact Assessments to be performed for site(s) performing Standard Rework.	Select validation site that already complies with environmental issues, if possible. Make assessments of potential impacts during Rework spec Validation Plan, site surveys, and identify need for funding early in process.

Figure H-7-1 Potential Problems and Solutions

## H-8 - MAINTENANCE PLAN

**WHO** – NAVAIR, APML, IPTs, FST, NAVICP, Fleet, Prime Contractor

**WHAT** – The document “Maintenance Plan” that describes the requirements and tasks to be accomplished for achieving, restoring, or maintaining the operational capability of a system, equipment, or facility.

**WHY** – The maintenance plan is the foundation for ensuring supportability and affordability of the fielded system.

**WHEN** – Initially in Concept & Technology Development, and iteratively throughout the life cycle

**WHERE** – NAVAIR, FST, Prime Contractor

**HOW** –

***Maintenance Plan:***

- All components that are repairable, maintenance significant consumables, and critical safety items. The SM&R code and technical data are provided to ensure accurate range and depth for spares procurement.
- A brief description of the maintenance tasks to be accomplished for restoring or maintaining the operational capability of a system or equipment, including preventive and corrective maintenance requirements. The detailed information available should include:
  - Frequency
  - Duration
  - Level of maintenance
  - Support Equipment
  - Environmental hazards
  - Warranty information

***Specific Instructions:*** Maintenance Plan is provided in three parts. Heading information is required to identify the subject of the Maintenance Plan, and preparation, approval and revision dates.

***Part 1: General Considerations.*** This is narrative information provided for the following areas:

- A. ***Design Description.*** Provide brief physical and functional description of the maintenance plan subject.

- B. *Maintenance Plan Summary.* Provide concise narrative of significant maintenance (both preventive and corrective) required at all (O, I, and D) levels of maintenance. Aircraft programs should include approach to the Integrated Maintenance Concept. Subject equipment for which contractor maintenance is planned should indicate which levels so supported.
- C. *Plan Rationale.* Provide narrative information of supporting logic and documentation to support the maintenance plan.

**Part 2: Repair Capability.** Provide specific planning data and technical factors for repairable components, or maintenance significant consumables. The information to be provided must be sufficient for initial provisioning.

**Part 3: Maintenance Requirements.** Identify all preventive and corrective maintenance actions with associated maintenance level, interval, and support equipment required.

## Maintenance Plan

Part I - General Considerations														Preparing Activity _____								
Item Name _____				TEC _____								Prepared by _____										
Application _____				WUC _____								Date of Submission _____										
Reference Number _____				CAGE _____								Revision Code _____										
NSN _____												Date of Revision _____										
NALC _____																						
SERD _____																						
Basis Number _____				Approved by _____								Date approved _____										
DLIS Screen Date _____				Title _____																		
2. Narrative																						
A. Design Description																						
B. Maintenance Plan Summary																						
C. Plan Rationale																						
Part II -Repair Capability																						
Repairable Items/Critical Consumables																						
WUC	Indenture	Reference Number	Item Name	SM&R	D E M I L	C R I T	R I P	I/R	NSO	MTBF	MTTR	MLDT	WOL	Maintenance Plan Technical Factors								
														GRF	MRF	BDSR or DSR	RPF	SAR	RSR	RRR		
Part III -Maintenance Requirements																						
Maintenance																						
Requirement Number	Requirement			Maintenance Level	Interval		Product Support Requirement															
							M&P	T&TS	SS	TD	SE	F	CRS	PHST								

Figure H-8-1. Maintenance Plan

**APML ROLE –**

- Ensure early maintenance planning considers operational and support environment of the weapons system, existing maintenance policies and instructions, and alternative maintenance concepts.
- Verify maintenance concept and planning are consistent with ORD requirements.
- Approval authority for the MPs.
- Ensure IPT follows the guidelines provided in the NAVAIRINST 4790.22 (see link below) for development, format policies, coordination, review and approval.
- Following approval, maintain the MPs as the baseline document for all future changes over the life of the system.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2F	Maintenance Planning	NAVAIR HQ	

**REF –**

NAVAIRINST 4790.22 Series

MIL-PRF-49506 (LMI) information

NAVAIR 00-25-406 Maintenance Plan data requirements

NAVAIR Contracting for Supportability Guide

MIL-HDBK-502 DoD HDBK Acquisition Logistics

OPNAVINST 4440.25

NAVAIRINST 4423.11

**LINKS –**

<https://www.nalda.navy.mil/3.6.1/mp.html>

Logistics Tool Box

NAVAIRINST 4790.22A

[MP Summary](#)

<https://www.nalda.navy.mil/3.6.1/guidance.html>

Logistics Tool Box



## **H-9 – LEVEL OF REPAIR ANALYSIS (LORA) / REPAIR LEVEL ANALYSIS (RLA)**

**WHO** – NAVAIR: PAX: 3.2/3.6, APML, Prime Contractor

**WHAT** – A process used to determine if a corrective maintenance item should be repaired or discarded and at which maintenance level this should occur.

**WHY** – To determine the least cost maintenance concept for the item.

**WHEN** –

- Before the SM&R code has been assigned
- Before the maintenance plan is written
  - LORA should be run at the start of SD&D
  - Final LORA submitted prior to the Provisioning Conference

**WHERE** – NAVAIR: PAX: 3.2, 3.6, Prime Contractor

**HOW** – Contact the AIR-3.6 LORA POC for technical information, training, and the JAM for LORA Model access.

**APML ROLE** –

- Ensure the team 3.2 representative identifies the requirement for LORA and necessary training for the team and contractor depending on where the analysis is conducted and by whom. In addition:
  - Identifies need for LORA
  - Provides contact list
  - Presents operational scenario
  - Reviews and approves input data
  - Reviews and approves LORA reports
  - Considers LORA recommendations

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2		NAVAIR HQ	
AIR-3.6		NAVAIR HQ	

## REF –

OPNAVINST 3000.12  
 SECNAVINST 5000.2B  
 OPNAVINST 4790.2, Chapter 7

## LINKS –

<https://www.nalda.navy.mil/>

Logistics Toolbox

<https://www.nalda.navy.mil/3.6/coo/lora/index.htm>

LORA PPT Slide Presentation

<https://www.nalda.navy.mil/3.6.3/lora/default.html>

Joint Aviation Model for LORA

## H-10 – RELIABILITY-CENTERED MAINTENANCE (RCM)

**WHO** – APML, APMSE, FST, Prime Contractor

**WHAT** – RCM is an analytical process used to determine Preventive Maintenance (PM) requirements and identify the need to take other actions that are warranted to ensure safe and cost effective operations of a system.

***Preventive Maintenance (PM):***

- One way that failure consequences can be mitigated
- A PM task should be implemented when it is appropriate to do so, but that might not be the best solution in all cases.
  - The RCM analysis might indicate, for example, that the best solution is to simply allow the failure to occur, then perform corrective maintenance to repair it
  - In yet other instances, analysis might indicate that some other action is warranted, such as an item redesign, a change in an operational or maintenance procedure, or any number of other actions, which will effectively reduce the consequences of failure to an acceptable level.

**WHY** – The primary objective of the RCM process is to identify ways to avoid or reduce the consequences of failures which, if allowed to occur, will adversely impact personnel safety, environmental health, mission accomplishment, or economics.

***Policy:*** The RCM process should be used to develop, justify and sustain all PM requirements in accordance with the references below. Deviations require AIR-3.2, Design Interface, Maintenance Planning approval.

- NAVAIR 00-25-403, Management Manual, Guidelines for the Naval Aviation Reliability-Centered Maintenance Process

**WHEN** – At the start of the supportability analysis and throughout the life cycle of the system

**WHERE** – NAVAIR, FST, Fleet, Prime Contractor

**HOW** –

***Apply The RCM Process:*** To the system during the life cycle in three basic stages:

- Influence design guidelines during Milestone A
- Develop initial PM requirements prior to Milestone B
- Update PM requirements prior to Milestone C and MS III
- Sustain PM requirements through continuous review and update during the Production and Deployment and Operation and Support Phases

**RCM Program Outline:** The efforts to establish an RCM program are much more than just the analysis. The template for an RCM program approach should include the following as a minimum (NAVAIR-00-25-403):

- **Program management**
  - RCM Plan (includes establishing team and training)
  - POA&M schedule
- **Analysis**
  - FMECA
  - Function selection
  - RCM logic
  - Task evaluation
  - Task selection
  - Special considerations
- **Implementation**
  - Packaging PM tasks
  - Other actions (mandatory and desirable but non-urgent)
  - Age Exploration (AE) tasks
  - Early task performance
- **Sustainment**
  - Analysis (continually monitor and optimize PM program)
  - Results (making necessary changes)
  - Assessment of effectiveness (measurement)

## **APML ROLE –**

### ***New Starts: (NAVAIRINST 4790.20A/ NAVAIR 00-25-403)***

- Ensure the RCM process requirement is fully embraced by the IPT, FST, Contractor and Field activities IAW established policies and guidelines
- Ensure all PM requirements are supported by documented RCM analysis decisions
- Establish Operating Service Periods (OSP) recommendations based on pertinent RCM data
- Coordinate all new or revised changes due to modified PM tasks
- Establish, submit and execute required funding for the RCM program
- Coordinate structural life limit changes with the Air Vehicle Department, AIR-4.3

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2		NAVAIR HQ	
	RCM Project Manager		(904) 317-1491
	RCM Team Leader		(301) 757-2660
	RCM Technical Assistance		(301) 757-2661/2663/2664/2659

**Mailing address:**

Department of the Navy  
Commander Naval Air Systems Command  
ATTN: Code 3.2, Bldg. 416 Suite 100A  
47013 Hinkle Circle Unit 8  
Patuxent River, MD 20670-1628  
FAX: (301) 757-8834

**REF –**

[NAVAIR 00-25-403](#) - Guidelines for the Naval Aviation Reliability-Centered Maintenance Process (01 February 2001)

[IRCMS 5.3.2 User's Manual](#) - for MS-DOS

[NAVAIRINST 4790.20A](#) - Reliability-Centered Maintenance Program

[IRCMS 6.0.1 User's Manual \(version 6.0.1\)](#) - Navigating and using IRCMS 6.0.1

[IRCMS 6.1.1 User's Manual \(version 6.1.1\)](#) - Navigating and using IRCMS 6.1.1

**LINKS –**

<https://www.nalda.navy.mil/3.2/rcm/>  
Logistics Tool Box

## H-11 – REPAIRABLES

**WHO** – APML, APMSE, IPTs, NAVICP, Prime Contractor

**WHAT** –

- **REPAIRABLE ITEM:** A durable item which, when unserviceable, can be economically restored to a serviceable condition through regular repair procedures.
- **REPAIR PART:** Material capable of separate supply and replacement that is required for the maintenance, overhaul, or the repair of an end article, for example, airframe, accessories, instruments, engine, propeller, electrical, electronics, photographic, armament, and training equipment, including the repair parts of SE. This definition does not include the SE end items.
- **REPAIR:** Necessary preparation, fault correction, disassembly, inspection, replacement of parts, adjustment, reassembly, calibration, or tests accomplished in restoring items to serviceable status.
- Repairables data;
  - When developed, can render a master list of repairable items, which enables identification, application, configuration tracking, and workload projections for each repairable item within the end item.
  - Is a major source of sustained maintenance planning and analysis information used by in-service engineers and logisticians to improve availability, maintainability and reduce cost over the system /component life cycle

**WHY** –

- Dictate the scope of the maintenance and support resources required to maintain them throughout the system life cycle
- Represent a primary cost driver of O&S costs over the system life cycle

***A repairables database has many uses for logistics managers:***

- Spares requirement determinations
- Budget forecasting
- Workload forecasting
- Identification of repairable candidates
- Reports tailored to a specific function (i.e., Source, Maintenance and Recoverability (SM&R) Code and Beyond Capability of Maintenance (BCM) Rate).

**WHEN** – Milestone B initially, and throughout the system life cycle

**WHERE –** NAVAIR, FST, NAVICP, Fleet, Prime Contractor

**HOW –**

- The system or item is initially broken down into the sum of all it's parts, a Work Breakdown Structure (WBS) during analysis
- Repairable items are segregated based on the results of the maintenance plan analyses
- A master list of repairable items is then established with each items corresponding information collected from various data sources, and can provide projections for the number of removals, repairs, failures, discrepancies, of a specific component by the using activity, at any, or all of the three levels of maintenance.

**APML ROLE –**

- Aware that the supportability analysis, (maintenance planning analysis) will produce a repairable item list report summary.
- Aware that the repairable item list has many uses in determining the support requirements for the system throughout the system life cycle, including;
 

○ Early system sustainment cost projections	○ Manpower resources
○ Repair of repairables budget forecasting	○ Facilities
○ High cost driver analysis	○ Maintenance training
○ Maintenance capability planning (IMRL,ICRL)	○ Technical data
○ Spares requirements and budgets (MRIL)	○ PHS&T
	○ Preventive maintenance
	○ Configuration management
- A repairable list is a product of analyses, not a requirement.
- Aware of it's use as a tool as a means to achieve a goal.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.2		NAVAIR HQ	
	Prime Contractor		
	NAVICP LEM		
	FST		

**REF –**

MIL-PRF-49506 Logistics Management Information (LMI)

DI-ALSS-81529 LMI Data Products

DI-ALSS-81530 LMI Summaries

MASTER REPAIRABLE ITEM LIST (MRIL) - A listing, in [NIIN](#) sequence, of all repairable assemblies, indicating the [DRP](#) (Navy or commercial) and provides shipping instructions for these assemblies when they become defective. This list is published as [NAVSUP Publication 4107](#).

**LINKS –**

<https://www.nalda.navy.mil/3.6.1/lmi.html>

Logistics Tool Box

<http://www.logsa.army.mil/alc/lmi/LMI.HTM>

To the Engineering Logistics and Field Support Center (ELFSC) Web Site!

<https://www.nalda.navy.mil/3.6.1/proddid.doc>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/summdid.doc>

Logistics Tool Box

<http://neds.nebt.daps.mil/directives/5442m4.pdf>

Aircraft Material Condition Definitions, Mission-Essential Subsystems Matrix (MESM) and Mission Descriptions

<https://www.nalda.navy.mil/nalda/secured/misc/misc.htm>

Logistics Tool Box

<https://www.nalda.navy.mil/4790/>

Logistics Tool Box



## H-12 – SUPPORTABILITY PLANNING AND ANALYSIS

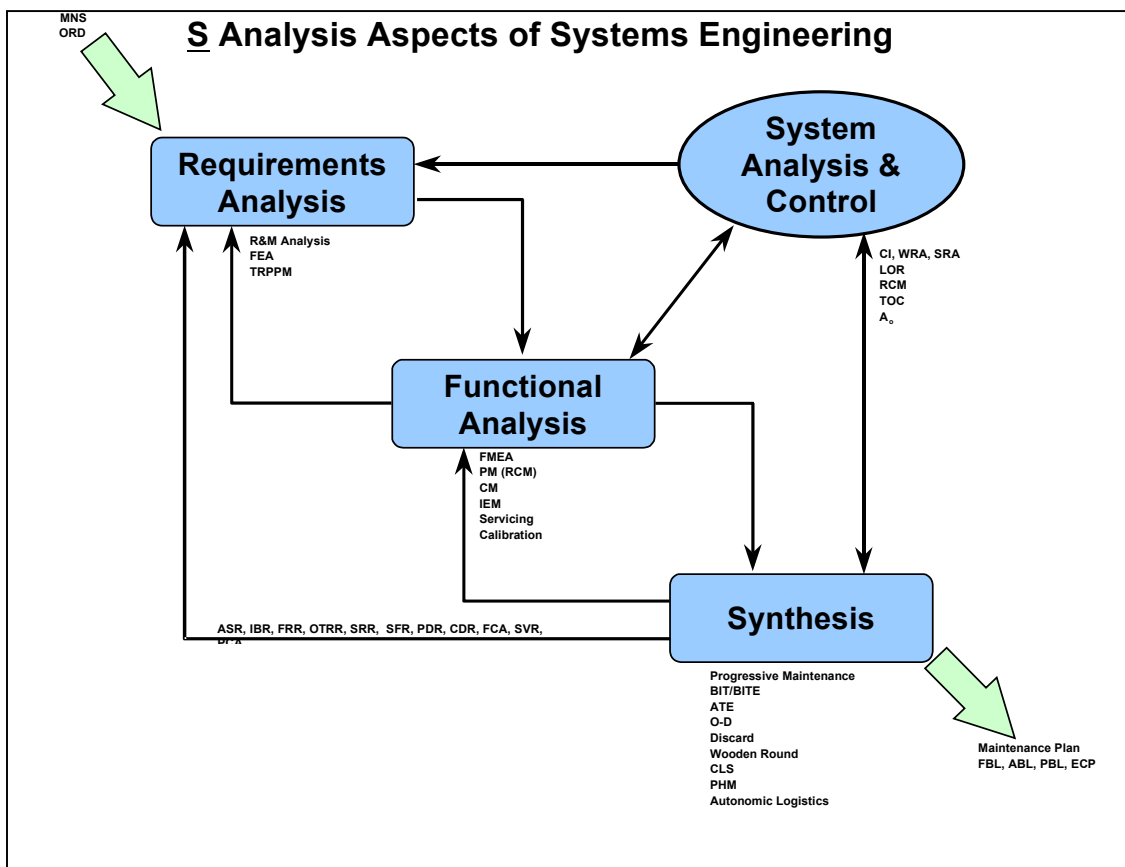
**WHO** – PM, APML, IPT, FST, Prime Contractor

### WHAT –

**Supportability S Analysis Plan:** Basic tool for establishing and executing an effective S Analysis program (see attached Figure H-12-4)

- Documents the:
  - **Who** will do it
  - **What** analysis tasks are to be accomplished
  - **When** each task will be accomplished
  - **Where** tasks will be accomplished
  - **How** the results of each task will be used
  - Process to produce schedules at the 7-digit WUC level providing early visibility into O, I, and D-level maintenance capability if required

**(S) Analysis:** The analytical process that generates the support requirements to satisfy the Support life cycle functional element in the Systems Engineering process



**WHY –****S Plan:**

- Primary management tool for conducting analyses
- Provides visibility into the analysis processes and procedures the contractor will follow, including but not limited to;
  - Identifying selected supportability analyses
  - Providing the rationale for, the inclusion or exclusion of specific analyses
  - Identifying the organization responsible for its conduct.

**S Analysis:** To ensure;

- Supportability is included as a system performance requirement.
- The system is concurrently developed.
- The system is acquired with the optimal support system and infrastructure.

**WHEN –**

**S Plan:** Milestone A initially, At Milestone B the specific analysis is initiated, and the data base is sustained throughout the system life cycle

**S Analysis:** Iteratively, throughout the life cycle

**WHERE –** NAVAIR, IPT, FST, Resident Integrated Logistics Support Detachment (RILSD), Prime contractor

**HOW –****S Plan:** Hardware and S Analysis Configuration:

- Ensure the configuration of the hardware is the same configuration to which the S Analysis is being conducted. Figure H-12-2 below provides example of information the plan should provide.
- Ensure the contractor S Analysis Plan has sufficient detail to determine contractor's confidence and commitment that engineering and product support controls can be evaluated
- The integration process should be continuous throughout System Integration, System Demonstration, LRIP, and Full Rate Production until the Physical Configuration Audit (PCA) and Product Baseline (PBL) are established (whether in Systems Acquisition or Production)
- The objective of engineering design and product support integration is to have configurations (for both hardware engineering and product support engineering using S Analysis) as identical as possible at major review points.
- Once initiated, analyses are conducted concurrently with the SE process iteratively throughout the development cycle.

- Integrate the Logistics and supportability analyses and Systems Engineering (SE) process.
- Supportability Analyses (SA) conducted within the SE process form the basis for decisions on the scope and level of logistics support, leading to performance requirements in the systems performance specification and influencing design considerations.
- Supportability Analyses can include any number of tools, techniques and practices including:
  - Logistics strategy
  - Use study
  - Comparative systems
  - Technological approaches and opportunities
  - Post production support

- A description of how S Analysis tasks and data will interface with
  - System and equipment design programs
  - System and equipment Reliability Program
  - System and equipment Maintainability Program
- The method by which Supportability Design Requirements are disseminated to designers and associated
- The method by which Supportability Design requirements are disseminated to subcontractors and the controls levied under such
- The procedures, methods, and controls for identifying and recording design problems or deficiencies affecting Supportability, corrective actions required, and the status of actions taken to resolve the problems.

Figure H-12-2 S Analysis Plan Areas Impacting Configuration

- The S Analysis Plan should address this schedule and the procedures used at each review point.
- By the Preliminary Design Review (PDR), engineering and product support should have established a Preliminary Design that they are both working towards.
- This should be reflected in an internal document that establishes the agreement between engineering and Product Support as Figure H-12-3 illustrates.
- It should be noted that S Analysis is performed (and subsequent product support is determined) for the PCA aircraft.

- This is significant, since the Production Configuration is the configuration delivered to the Fleet.
- S Analysis is done *iteratively* for configuration changes until PCA. After PCA, all changes to the Configuration Item (and S Analysis) must be made with a formal ECP.
- *All changes* that occur from PDR through PCA, must be continually transmitted to the Product Support S Analyst by the engineer (Design Interface is the mechanism used (See NAVAIR 00-25-406)).

The S Analysis Plan defines the process to incorporate configuration changes into the database and the continued update to reflect those changes.

**S Analysis:** Supportability factors must be considered in an organized manner throughout the design and/or planning actions for the system being acquired and for each applicable logistics support element as well.

The contractor necessarily performs many supportability analyses and therefore the determination of what analyses and the corresponding data to be delivered is an important first step. Acquisition Reform brought the tool, Logistics Management Information (LMI) MIL-PRF-49506, to help in this regard. It addresses in broad terms many analyses paralleling the logistics elements. The tool allows the tailoring of specific system or management needs and can be delivered in specific summaries requested contractually by the requirer. Examples of the Supportability Analyses Summaries include:

- Reliability, Maintainability, and Availability Analyses
- Maintenance Planning Analysis
- Repair Analysis
- Support and Test Equipment Analysis
- Supply Support Analysis
- Manpower, Personnel, and Training Analysis
- Facilities Analysis
- Packaging, Handling, Storage, and Transportation Analysis
- Post Production Support Analysis
- Redundancy Analysis
- FMECA
- RCM Analysis
- Test, Analyze, Fix and Test
- Failure Reporting, Analysis, and Corrective Action System (FRACAS)

An example of a Supportability Analysis flow process is provided as attachment (1).

## APML ROLE –

### S Plan:

- Establish the requirement for a S analysis plan within the IPT process
- Ensure the plan is a requirement of the system contract, IPT has agreed to the expectations, and it's delivery is timely
- Ensure IPT performs periodic evaluations of the contractor's internal paperwork such as drawings, mockups, and reports, (Identified in the S Analysis Plan) against evolving S Analysis data
- Ensure evaluations of the resulting data verify that product support will maintain the readiness of the hardware delivered to the Fleet.
- Ensure the plan includes a scheduled requirement for ILS evaluation of engineering data.
- Monitor internal company directives and examples of paper that are used to control communications between engineering and product support (i.e. interface memos).
- Ensure IPT interface maintains a clear baseline design agreed upon between engineering and product support, so as the design engineer proceeds to design the hardware item, those variances or differences to the baseline design are communicated to the S analyst.
- Figure H-12-2 illustrates this concept of controlling the integrity of the S Analysis against the correct hardware design by communication between the engineer and the logistician.
- Ensure this process is defined in the S Analysis plan.

### S Analysis:

- Identify requirements and candidates for supportability analyses.
- Determine analytical process and tools to be used to conduct analyses (LMI Performance specification, MIL-PRF-49506 preferred) with appropriate IPT.
- Initiate planning requirements (management resources and contract).
- Conduct analyses required.
- Use the results of the analyses as the foundation of the life cycle support concept iteratively.

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E		NAVAIR HQ	(301) 757-8256

## REF –

MIL-PRF-49506 LOGISTICS MANAGEMENT INFORMATION (LMI)

NAVAIR Contracting for Supportability Guide

DoD Deskbook

DoD Acquisition Logistics Handbook (ALH)

MIL-PRF-49506 Logistics Management Information (LMI)

ALSP Guide

Contractor For Supportability Guide

## LINKS –

<http://web2.deskbook.osd.mil/default.asp?>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[MIL-HDBK-502](#)

*DoD Handbook Acquisition Logistics (ALH)*

<https://www.nalda.navy.mil/3.6.1/alsp0602.doc>

Logistics Tool Box

[MIL-PRF-49506, Performance Specification Logistics Management Information \(LMI\),](#)

Logistics Management Information Specification Approved

[DI-ALSS-81529 Logistics Management Information \(LMI\) data Product\(s\)](#)

[DI-ALSS-81530 Logistics Management Information \(LMI\) Summaries](#)

<http://www.logsa.army.mil/alc/lmi/lmi.html>.

Engineering Logistics and Field Support Center (ELFSC) Web Site!

<https://www.nalda.navy.mil/3.6.1/contract.html>

Logistics Tool Box

<https://www.nalda.navy.mil/>

Logistics Tool Box

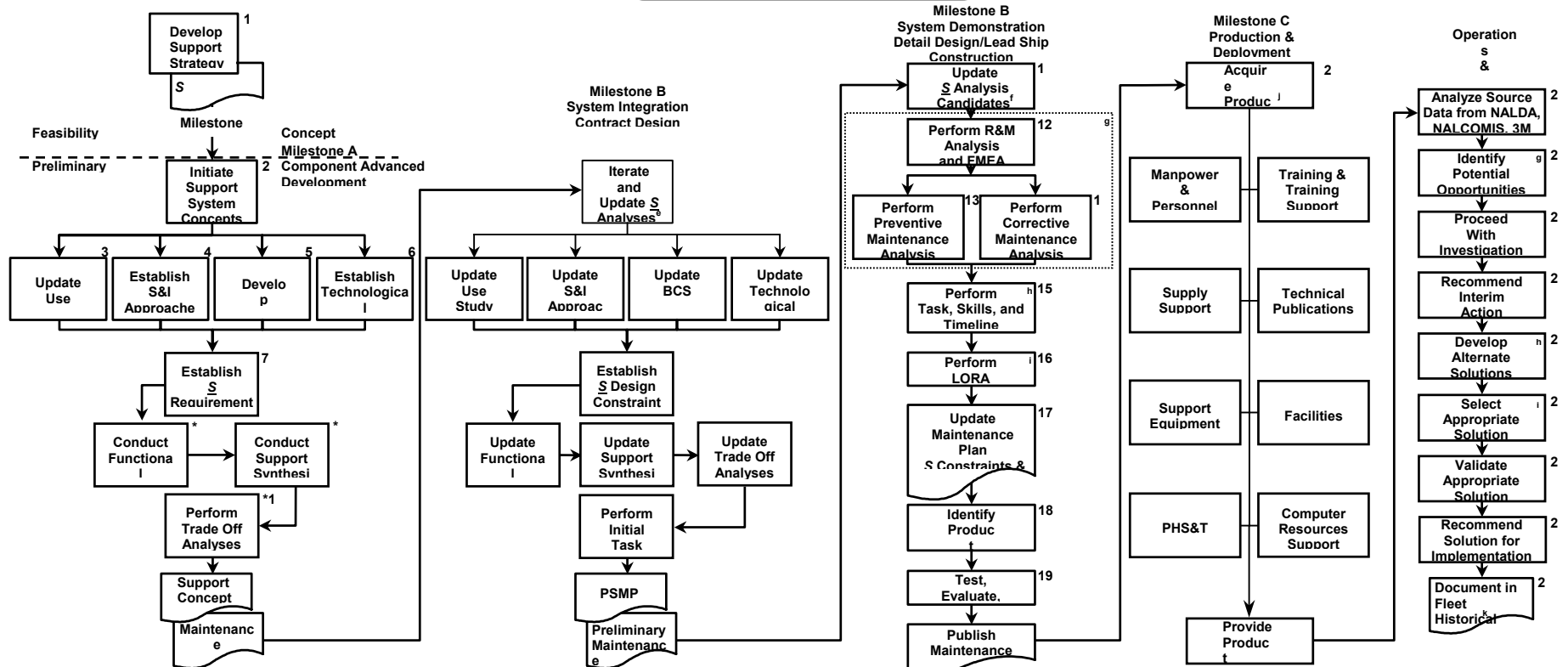
<https://www.nalda.navy.mil/3.6.1/alspguidapr.doc>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/CFSG1.doc>

Logistics Tool Box

# Supportability Analysis



## Notes:

- Selected elements of Use Study, Comparative Analysis, FEA and initial TRPPM analysis, and Supportability (S) Analysis Strategy at system level.
- S performance requirements (Manpower, \$, and A<sub>0</sub>).
- System level.
- Select dependent variable to be optimized. Only one can be optimized at a time.
- Subsystem level.
- Repairable item level (WRAs and SRAs or LRUs and SRUs). Based on cost, complexity, criticality, and support demand. Includes support equipment and training equipment.
- Updated Functional Analysis.
- Updated Support Synthesis.
- Updated Tradeoff Analysis.
- Design Interface/Maintenance Planning required to constrain all Product Support Functions.

## H-13 - SOURCE MAINTENANCE AND RECOVERABILITY (SM&R) CODES

**WHO** – APML, FST, NAVICP, Prime Contractor

**WHAT** – Source, Maintenance and Recoverability Codes (SM&R) communicate maintenance and supply instructions to the various logistics support levels and using commands. These codes are made available to their intended users in technical publications such as allowance lists, illustrated parts breakdown manuals, maintenance manuals, and supply documents. Codes are assigned to each support item based on the logistics support planned for the end item and its components.

The SM&R code assigned to each item of supply is a record of a technical decision reflecting consideration of the design, manufacture, application, maintenance, supply practices, and capabilities of the support item and the operational missions of the end item. Approved SM&R coding chart provided below.

**WHY** – To establish uniform policies, procedures, management tools, and means of communication that will promote inter-service and integrated material support within and among the military services and participating agencies. Instituting uniform source, maintenance, and recoverability codes is an essential step toward improving overall capabilities for more effective inter-service and integrated support.

Uniform SM&R codes will be used by all Department of Defense services and participating agencies. Their logistics management systems will apply these codes to provide uniformity and a means of communication of information for multi-service/agency equipments.

Joint service and systems command programs should make every effort to ensure uniform SM&R codes are used in order to provide continuity throughout the overall support system. Establishment of uniform SM&R codes is an essential step toward improvements in the effectiveness of inter-service and integrated support.

This applies to all DoD activities, participating agencies, and contractors involved with supportability analysis summaries. (It also applies to provisioning or item selection functions by or for DoD weapons, systems, equipments, publications, software/hardware, training or training devices, and support equipment.)

Uniform SM&R codes will be used to identify the source of spares, repair parts, and end items or support equipment and the levels of maintenance authorized to use, maintain, overhaul, rework, rebuild, condemn, or dispose of them. The initial assignment and subsequent changes to SM&R codes significantly affect funding appropriations, requirements determination, and all of the elements of logistics. The SM&R instruction is to be used in the processes of acquiring Logistics Management Information, maintenance planning development, and other provisioning functions.



**WHEN** – Uniform SM&R codes will be assigned to support items during the initial acquisition phase for end items of materiel. These codes may also be applied to end items or support items already in the supply systems, or to support items entering the supply system after initial acquisition of the end item.

**WHERE** – NAVAIR, FST, NAVICP, Prime Contractor

**HOW** – See NAVSUP Guide P-719 for SM&R Code guidance and procedures. For SM&R Code policy questions and enterpetation contact the POC.

### **APML ROLE –**

- Ensure adherence to policy and guidelines for application of initial SM&R code requirements and assignments, changes and administrative processing.
- Ensure proper tracking and management with the IPTs, users, FST and NAVICP to ensure all aspects are covered.

### **POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	SM&R Code Policy and Changes	NAVAIR HQ	(301) 757-8228
	RCM Project Manager		(904) 317-1491
	RCM Team Leader		(301) 757-2660
	RCM Technical Assistance		(301) 757-2661/3/4, 2659

### **REF –**

The joint service SM&R code policy is provided in [OPNAVINST 4410.2A](#), NAVSUPINST 4423.29, NAVSUP P-719

### **LINKS –**

<https://www.nalda.navy.mil/3.6.1/smr.html>

Logistics Tool Box

[http://neds.nebt.daps.mil/directives/4410\\_2a.pdf](http://neds.nebt.daps.mil/directives/4410_2a.pdf)

Joint Regulation Governing the use and application of Uniform SM&R Codes

<https://www.nalda.navy.mil/3.6.1/chtappb9905.doc>

Logistics Tool Box

Navy SM&R Coding Reference Chart				NAVSUP INSTR 4423.29		PUB719 (NSN 0530-LP-011-2960)							
Source				Maintenance		Recoverability		Service Option Code					
1st Pos.		2nd Position		3rd Position		4th Position		5th Position		6th Position			
Means of Acquiring Support				Use: Lowest level authorized to remove/replace the item.		Repair: Lowest level with capability and resources to perform complete repair action.		Disposition: When unserviceable or uneconomically repairable, condemn or dispose.		Assigned to support items to convey specific information to the services logistics community/operating forces.			
P	A	Item: Stocked.		O	Org/Unit	O	Org/Unit	O	Org/Unit	1	I-Level 1st degree		
	B	Item: Stocked, Insurance.								2	I-Level 2nd degree		
	C	Item: Stocked, Deteriorative.								3	I-Level 3rd degree		
	D	Item: Support, initial issue of outfitting stocked only for additional initial issue.											
	E	Equipment: Support, stocked for initial issue or outfitting of specified maintenance activities.		2	Minesweeper	2	Minesweeper	F	I/Afloat	6	Commercial item, organically mfr'd		
	F	Equipment: Support, nonstocked, centrally procured on demand.		3	Submarines	3	Submarines						
	G	Item: Stocked for sustained support. Uneconomical to produce at a later time.		4	Aux/Amphib	4	Aux/Amphib						
	H	Item: Stocked, contains HAZMAT. HMIS/MSDS reporting required.		5	Destroyer, FFG	5	Destroyer, FFG	G	Ashore and Afloat	8	Non-consumable; 2nd degree engine I-level		
R	Terminal or obsolete, replaced.		6	Cruiser/Carrier	6	Cruiser/Carrier							
K	D	Item: Depot O/H & maintenance kits.		F	I/Afloat	F	I/Afloat	G	Ashore and Afloat	H	I/Ashore		
	F	Item: Maintenance kit, place at O, F, H, L.										G	Ashore and Afloat
	B	Item: In both depot repair & maintenance kits.											
M	O	Manufacture or fabricate at unit level.		G	Ashore and Afloat	H	I/Ashore	K	DLR; Contractor facility	9	Non-consumable; 3rd degree engine I-level		
	F	Mfr or fab at intermediate/DS level.											
	H	Mfr or fab at intermediate/GS level.											
	L	Mfr or fab at specialized repair activity (SRA).		K	Contractor Facility	K	Contractor facility	L	Intermediate SRA	E	End to end test		
	G	Mfr or fab at both afloat and ashore.											
	D	Mfr or fab at depot maintenance level.											
A	O	Item: Assembled at org/unit.		L	Intermediate SRA	D	Depot	D	DLR; Condemn or dispose at depot	J	Inter-service DLR repairable below D-level		
	F	Item: Assembled at intermediate level – afloat.											
	H	Item: Assembled at intermediate level – ashore.											
	L	Item: Assembled at SRA.		D	Depot	Z	Non-repairable	R	Gold disc repair				
	G	Item: Assembled afloat or ashore.											
	D	Item: Assembled at depot maintenance level.											
X	A	Item: Requisition next higher assembly.		Z	Ref Only	B	Recondition	A	Non-repairable but requires special handling	T	Training devices		
	B	Item: Not procured or stocked. Available thru salvage. Req. by CAGE/part number.											
	C	Installation drawing, diagram, instruction sheet. Identify by CAGE/part number.											
	D	Non-stocked. Obtain via local purchase.											

## H-14 - WORK UNIT CODES (WUC)

**WHO** – NAVAIR: PAX: 3.6, APML, FST, Prime Contractor

**WHAT** – The WUC is a two, three, five, or up to a thirty-two character numeric or alphanumeric code. It identifies a system, sets, groups, installations, repairables, repairable subassemblies, or part of an end item being worked on in a hierarchical structure.

- Key data element to maintenance data processing system
- WUC manual published by NATEC (role changing with OOMA)
  - Advisory
  - OOMA will become WUC database by system
  - Results in timeliness, accuracy and

**WHY** – Work Unit Codes are assigned to all types of Naval Aviation equipment and uniquely identify systems, sets, groups, installations, repairables, or parts of an end item for documenting maintenance tasks.

**WHEN** – Initially with Maintenance planning, for approved ECPs on new or modified equipments incorporated which require WUC development and or modification.

**WHERE** – NAVAIR, FST

- AIR-3.2E owns the process
- IPTs (3.2 rep) approves changes
- WUC manuals are currently on NATEC website
- OOMA will become the WUC source once fully employed

**HOW** –

***WUC Assignment:***

- A WUC is usually assigned to every repairable item. (see links below)
- Five digit codes are assigned to those items which will normally be removed, replaced, tested, adjusted or repaired by maintenance personnel while performing "on-equipment" work, i.e., work at or on the weapon system which does not require the use of shop equipment other than portable type test or repair equipment.
- Sixth through thirty-second position codes are usually assigned to repairable item, subassemblies, modules/units, cards and significant parts in order to facilitate the reporting of repair.
- Departures from this basic format may be authorized to serve special management requirements.

**Weapon Systems And Support Equipment:** All weapon systems and support equipment specified in the contract shall have a WUC assigned.

**WUC Numbering System:** WUCs can consist of up to 32 alpha-numeric characters and are broken down as follows:

- **First two digits:** The first two digits identify the types of system or equipment. These digits are standardized codes and shall not be changed except by a change notice or revision of this document.
- **Third character:** The third character is always alphabetic for support equipment. It identifies engine models in those instances where the third character is used exclusively and in conjunction with the fourth character identifies entire installation, a major group of assemblies, a complete electronics set/group or an end item of support equipment.
- **Fourth character:** Always alphabetic for support equipment. It identifies items such as a complete electronics set/group (AN/ARC-27, AN/APS-38), an entire support equipment set (AN/APM-200, AN/ASM-499, AN/USM-247), a specific group of components or complete engine sections/modules. When reference designations such as 1, 2, etc., are used, the Work Unit Code nomenclature will not reflect these reference designations. See paragraph 1.2.4.
- **Fifth character:** The fifth character is normally used to indicate individual components associated with the "on-equipment" phase of maintenance work. The main key is the indenture of the hierarchical structure. The number nine, used in the fifth position, indicates Not Otherwise Coded (NOC). It is the last entry in each sequence of five character WUCs.  
***NOTE:** The NOC category is used for reporting occasional or recurring discrepancies on non-coded items and may indicate the need for specific codes for these items.*
- **Sixth character:** The sixth character normally specifies an installation, assembly, subassembly, part group, module, unit etc. When possible, these items shall be identified by reference designations, for example 1A1, 1A2, in accordance with IEEE-200-75.
- **Seventh through thirty-second character:** These characters are normally used to identify module subassemblies or cards, etc. Whenever possible, these items shall be identified by reference designations such as 1A1A1, 1A1A2, 1A1A3. Currently, WUCs are limited to thirty-two characters.

Examples of WUC structures provided in Figure H-14-1 and H-14-2 below:

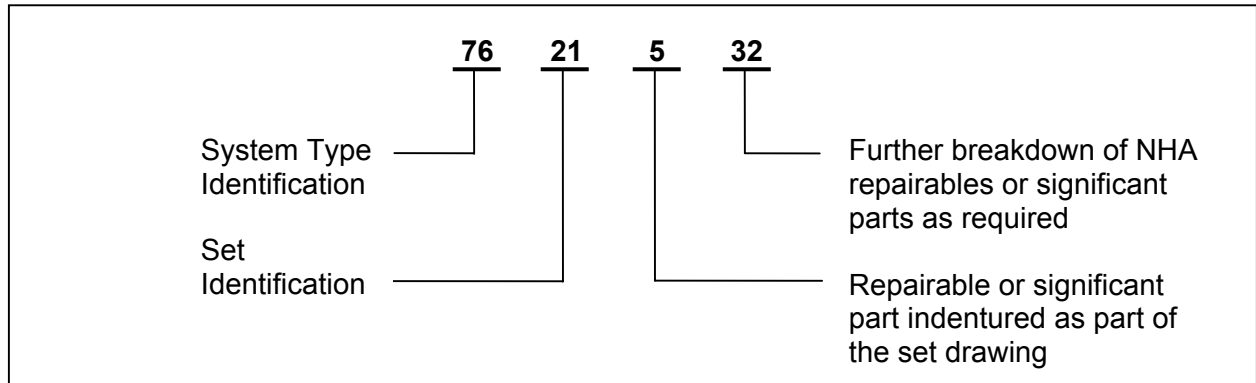


Figure H-14-1: WUC numbering structure for avionics systems and avionics trainers.

**Note:** The first two digits provide system type identification. Third and fourth characters designate a complete avionics set, e.g., AN/ARN-21, AN/ARC-27, AN/ASB-12.

**Note:** The fifth character identifies components or significant parts which cannot be further disassembled. Sixth and seventh characters identify further breakdown of components as required and shall be numeric 1 through 9 followed by alphabetical A through Z excluding I and O.

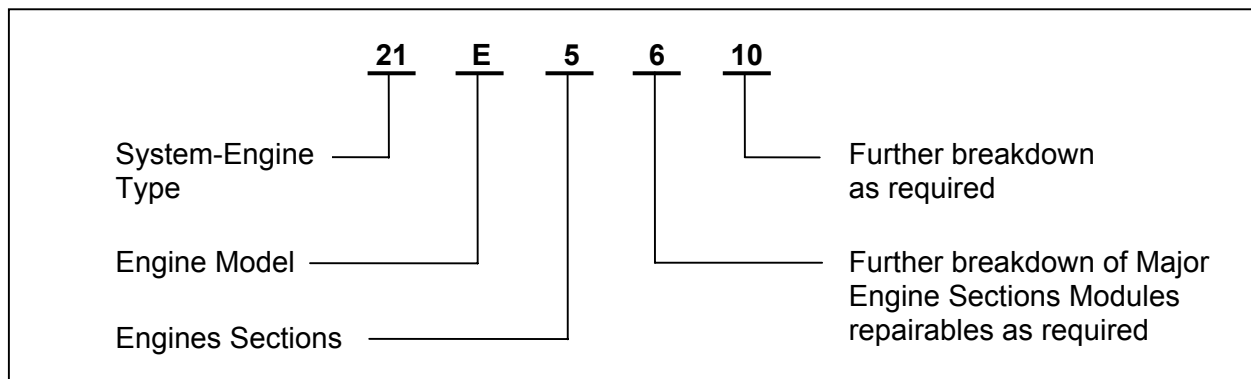


Figure H-14-2: WUC numbering structure for power plants.

**Note:** In the figure above, the first two digits identify types of engines such as reciprocating, turboprop, turbojet and turbofan. Third and fourth characters designate engine model and sections, modules or repairables, respectively.

The assignment of Work Unit Codes should be performed in accordance with the NAVAIR "Work Unit Code Guide for Aeronautical Equipment." The issuance of Work Unit Codes should be performed in accordance with MIL-M-23782 (AS).

Work Unit Codes (WUC) shall be developed in functional system breakdown order. The repairability aspect of an item shall be determined by the applicable Source, Maintenance, and Recoverability (SM&R) codes, reflected in the applicable WUC candidate list that will be provided as initial source data for the assignment of WUC's.

**NOTE:**

*Functional system breakdown equates to the identification of the system level codes (first two digits of the WUC) then to the top down breakdown of the drawing package.*

**Policy Statement:**

The use of a UNS or ENS will be determined by the following:

**For Legacy (Existing) Systems:** No Change Necessary. Continue to use Type Equipment Code (TEC), Position Identification (POSIT), and 7 digit Work Unit Code (WUC).

**For New Development Systems/Major Modifications:** If Major Mod, may choose Legacy Systems approach above, or consider either Option A or Option B below. New Development, or COTS/NDI, Systems may consider either Option A or Option B.

- *Option A:* Preferred Option. Use the expanded WUC and incorporate its provisions in applicable information systems.
- *Option B:* Use a Uniform Numbering System (UNS) or commercial equivalent. Create a UNS to ENS cross reference table for installation in NALCOMIS to convert UNS to ENS at input. All up-line processing will be accomplished in terms of ENS. Programs will be expected to fund development of UNS/ENS cross reference tables.

Implementation of Option B will require the cooperation of the new start/major modification program. The development and use of numbering systems that do not comply with Option A place a significant, additional burden on legacy data systems. If individual programs do adopt non-ENS compliant approaches, they must also bear the costs (in terms of both schedule and dollars) associated with the construction, installation, and update of program interfaces required to adequately integrate Option B systems into the legacy data environment.

**NOTE:** NAVAIRINST 4423.11 is currently being converted to an OPNAV instruction and guide – this TAB will be updated as that occurs

**APML ROLE –**

- Ensure for new systems, the AIR-3.2 member (FST or NAVAIR) identifies and approves WUC development and assignments in accordance with policy and instructions (see references below)
- Ensure updates, changes and maintenance plan incorporations are made as required and in accordance with policy and instructions (see references below)

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.3	WUC	NAVAIR HQ	
AIR-3.2		NAVAIR: 3.2/FST	(301) 757-9195/2650 - DSN 757

**REF –**

MIL-M-23782 (AS) Manuals, Technical: Work Unit Code; Preparation of

NAVAIR Work Unit Code Guide for Aeronautical Equipment

**LINKS –**

<https://www.nalda.navy.mil/3.6.1/gde9710.doc>

WUC Guidebook, policy and information

<http://www.natec.navy.mil/>

Naval Air Technical Data and Engineering Services Center

<https://www.nalda.navy.mil/nalda/secured/misc/misc.htm>

Link to WUC/PN/NIIN cross reference

## H-15 - USER'S LOGISTICS SUPPORT SUMMARY (ULSS)

**WHO** – APML, FST, Fleet

**WHAT** – The ULSS is for the **“USERS”** to identify logistics resources necessary to operate and maintain the systems, subsystems and equipment in their operational environment.

- Separate ULSSs may be required for each site
- Satisfies a number of commonly known formats including;
  - Operational Logistics Support Plan (OLSP)
  - Operational Logistics Support Summary (OLSS)
  - Phase Support Plan (PSP)
  - Material Fielding Plan (MFP)

**WHY** – Conveys to a particular site, a brief logistics summary of the planned logistics support elements required, available, and or their estimated availability, to fully activate that site.

**WHEN** –

- ULSSs are developed and made available during LRIP and should reflect production planning
- Required by the operational site 90 days prior to operational use of the equipment at that site

**WHERE** – NAVAIR, IPTs, FIT, Fleet, Prime Contractor

**HOW** –

- Initiate the ULSS in the format provided in the DON discretionary section of the DoD 5000 (see links below)
- Coordinate draft document with Fleet users
- Approve and distribute final ULSS based on site activation schedule and ALSP

### ***ULSS Format:***

- |  |   |
|--|---|
| • Equipment information  | • Support Equipment   |
| • Maintenance concept  | • Training (courses by site and schedule)                               |
| • Site locations   | • Military/ civilian personnel requirements                             |
| • Support arrangements prior to organic support, if applicable | • Software support  |
| • Key participants in the ALS process                          | • Facilities associated with the equipment (new, modifications, MILCON) |
| • Allowance parts list   | • Warranty information and process                                      |
| • Technical documentation                                      | • Special requirements  |



**Example of ULSS scenario:** Description of the resources required is provided for each Product Support function and at a level of detail sufficient to allow planning at the maintenance Work Center.

**For example:** When the APML provides the ULSS for the wheel and brake system to the O- and I-level Work Center, it will defines all the resources required by the Work Center. Spares and repair parts requirements are presented in a Support Material List (for contractor support to MSD) and outfitting list (for Navy support following MSD). Since O-, I-, and D-level organic support is phased in and MSD (usually) occurs during the phase-in, the ULSS will initially reflect SML spares and be updated to initial outfitting requirements. Figure H-15-1 illustrates the level of detail that should be provided. As Figure H-15-1 illustrates, the squadron or site can determine the number of spares that should be on-hand in the base supply system. These quantities are calculated from factors in the Maintenance Plan for the flying hours that the squadron or site expects to fly.

		ORGANIZATIONAL LEVEL ALLOWANCE REQUIREMENTS												
		B-215		1-	1200-	1801-	3000-	3801-	4600-	4801-	6200-	6401-	7600-	8601-
NOMENCLATURE	PM/NSN	PART 1	SM&R	1199	1800	2999	3800	4599	4800	6199	6400	7599	8600	10999
BACKUP REQUIREMENTS		PART 5		1- 800	801- 1999	2000- 2200								
BRAKE, MULTIPLE	2606072-7		PAOGG	0	0	0	0	0	0	0	0	0	0	1
DISC-WHEEL, MLG	2RTN1630-01-154-5R17SF			1	1	1								
SERVOVALVE ASSY	MG12362-5		PAODD	0	0	1	1	1	1	1	1	1	2	2
HYDRAULIC-BRAKE CONTROL	2RH1630-01-143-5706SF			0	0	0								
VALVE, CHECK	4C2640-3		PAOZZ	0	0	1	1	1	1	1	1	1	2	2
	9C4820-00-341-3911			0	0	0								
SWIVEL JOINT ASSY	AER1580G		PAOOO	0	0	0	0	0	0	0	0	0	0	0
WHEEL BRAKE & MLG	1RD1640-01-142-4268SF			0	0	0								
SIDE BRACE CYL														
ACCUMULATOR, HYD-	60854-4		PAOGG	0	0	0	1	1	1	2	2	2	3	3
EMERGENCY BRAKE	1RD1650-01-142-125-3118SF			0	0	0								

Figure H-15-1 Typical User's Logistic Support Summary for Supply

Level	PEC COM	Nomenclature	Part No.	SERD
I,D	C	Conductivity Meter	FM 104	2327
I,D	C	Inspection Unit, Florescent Penetrant	H-710G	
I	C	Meter Ultraviolet	J-221	1311
I,D	C	Inspection Unit, Florescent Penetrant	ZA-28W	
I,D	C	Machine, Riveting Pneumatic Spin	2558200	0893
I,D	C	Peen, Riveting	2560599	1592
I,D	C	Fixture, Riveting Torque Tube Caps	256031	0892
I	C	Fixture, Riveting Torque Tube Caps	256041	1305

Figure H-15-02 ULSS Support Equipment Data

The SE that the squadron and site will require is provided by level of maintenance and by items of SE. By using the Equipment Data section of the ULSS the squadron (or site) can monitor SE assets “pushed” to them and can also “pull” items from the system in sufficient time to ensure complete capability. An example of the level of detail provided in the SE section is shown in Figure H-15-2.

The scheduling of training should be based on Fleet planned tours of duty. The development of the ULSS, if done considering these Fleet inputs will optimally support Fleet requirements. The ULSS is used to communicate to the squadron and the site when and what training courses are planned. Using this information, squadron and site personnel rotations can be adjusted to maximize optimal training and minimize training required because personnel arrived after the planned training was completed. Figure H-15-3 illustrates the type and the level of detail required in the training section of the ULSS.

Course Title	Training Activity	Trade/Skill	Number of Students	Course Length	Schedule
IOT&E-F/A-18 Hyd./Structures	Prime Contractor	AMH/AMS	13	18 DAYS	8/21/10
F/A-18 Follow-On Operational Test and Evaluation (FOT&E) - F/A-18 FOT&E HYD./Structures	Prime Contractor	AMH/AMS	14	16 DAYS	7/12
VFA-12S FRS CADRE OH-F/A-18 Structures Systems	Prime Contractor	AMH/AMS6055/6097	16-18	22 DAYS	2/4/11
Board of Inspection and Survey (BIS) (FIGHTER) F/A-18 BIS Hyd.	Prime Contractor	AMH/AMS6055/6097	14-17	22 DAYS	6/8/11
Board of Inspection and Survey (BIS) (Fighter) F/A-18 BIS Structures Systems	Prime Contractor	AMH/AMS6055/609	14-17	22 DAYS	7/1/11
Attack OPEVAL-F/A-18 Hyd./Structures	Prime Contractor	AMH/AMS	11	22 DAYS	8/4/11
Board Of Inspection and (BIS) (Attack) F/A-18 Hyd./ Structures	Prime Contractor	AMH/AMS6055/609	14-17	22 DAYS	10/19/11

Figure H-15-3 Typical User's Logistic Support Summary Training Data

The ULSS also identifies the Technical Publications required by the O- and I-level Work Centers. Normally, the APML will have an advanced set of technical publications shipped from the contractor to the initial sites, however, follow-on sites must order (pull) the technical publications from the Defense Automated Printing Services Office (DAPSO). The ULSS describes the technical publications that the squadron and site will require. The site can, by use of the ULSS, ensure that it receives all of the technical publications pulled or pushed to it for each of the systems. Figure H-15-4 illustrates the type of technical publication information provided in the ULSS.

Organizational Level Data Requirements				
<u>Manual Number</u>	<u>Chg. No./ Date</u>	<u>Title</u>	<u>LOM</u>	<u>Available from NATEC</u>
A1-425AC-130-000	Initial Issue 04/83	Multiple Disk Brake	I	Yes
A1-442AC-130-000	Revision 01/84	Hyd. Emer. Brake Accum.	I	Yes
Intermediate Level Data Requirements				
<u>Manual Number</u>	<u>Chg. No./ Date</u>	<u>Title</u>	<u>LOM</u>	<u>Available from NATEC</u>
A1-F18AC-130-100	4 2-15-85	LDG Gear & REL Systems Principles of Operation	O	Yes
A1-F18AC-130-200	4 9-1-84	LDG Gear & REL Systems Testing & Troubleshooting	O	Yes
A1-F18AC-130-300	4 9-1-84	LDG Gear & REL Systems Maintenance with IPS	O	Yes
A1-F18AC-130-500	4 2-15-85	LDG Gear & REL Systems Schematic	O	Yes
A1-F18AC-AML-000		Aircraft Tech Manual List	O	Yes
A1-F18AC-FIM-000	2 1-15-85	Fault Isolation Manual	O	Yes

Figure H-15-4 Typical User's Logistic Support Summary Publication Data

In each section of the ULSS, product support functions are addressed in sufficient detail to be used by the Fleet to establish maintenance capability and material support including; resources required for maintenance capability, and when the resources will be delivered. Figure H-15-5 provides a typical schedule. These schedules, as illustrated in Figure H-15-5, provide the following information to the Fleet:

- The scheduled dates for full organic O- and I-level capability.
- The product support functions that are delaying the establishment of capability.
- The period of contractor support required until full organic capability is established.

The ULSS is a communication link between the APML and the Fleet. The APML should conduct periodic Transition Conferences. These conferences require research preparation. Using the ULSSs as a starting point, each schedule is monitored to ensure the planned schedule is being met. The purpose of the Transition Conference is to identify problems impacting organic capability to initiate action to either meet the schedule or identify workarounds to ensure that Fleet support occurs when it is required. As the program progresses and approaches early Full-Rate Production, changes to the support system occur. These are documented and are communicated to the Fleet. ULSSs are developed and maintained until full organic O-, I-, and D-level capability exist. As the transition to full organic capability progresses, the data contained in Maintenance Plans and ULSSs may be converted to a master list of repairable items.

### APML ROLE –

- Ensure ULSS requirement is identified, developed and distributed with fleet concurrence and interface, prior to site activation and receipt of system equipment. (ILA, IOCSR, maintenance capability requirement)
- Update ALSP (ULSS is an attachment)
- Maintain current status of the support program requirements to ensure the ULSSs reflect the latest status of support resources necessary to fully activate the operational site
- Follow-up until site is fully activated and all planned support program requirements are in place

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			

### REF –

DEPSECDEF Memo dtd 30 October 20002

### LINKS –

<http://dod5000.dau.mil/>

New DoD Resource Center

<http://web1.deskbook.osd.mil/default.asp>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

[Department of the Navy \(DON\) Section \(Discretionary\) of Defense Acquisition Deskbook \(Reference Library\) February 12, 1997](#)

Appendix II ASN(RD&A)/CNO/CMC Coordination Procedures for: (Discretionary)

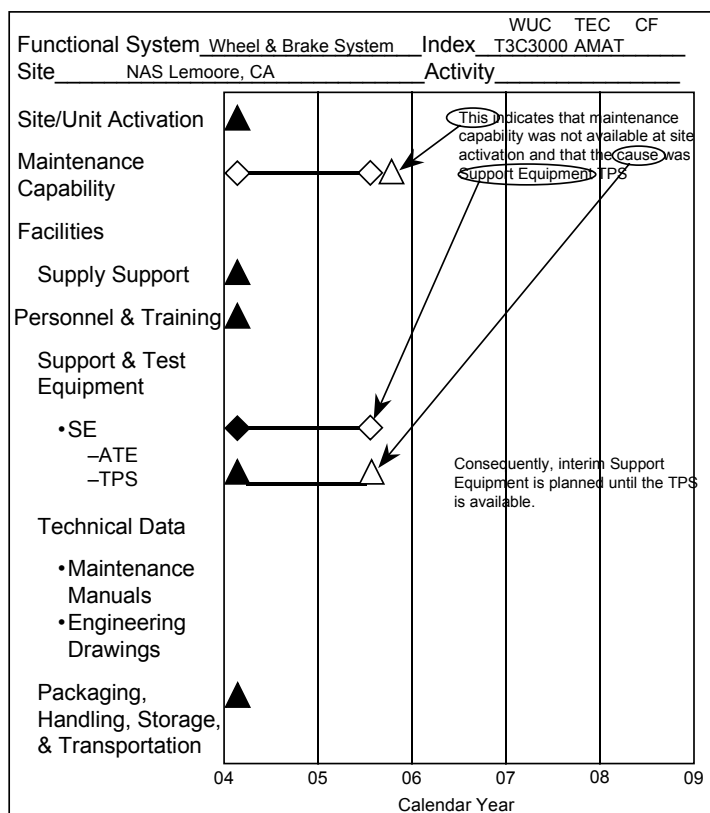
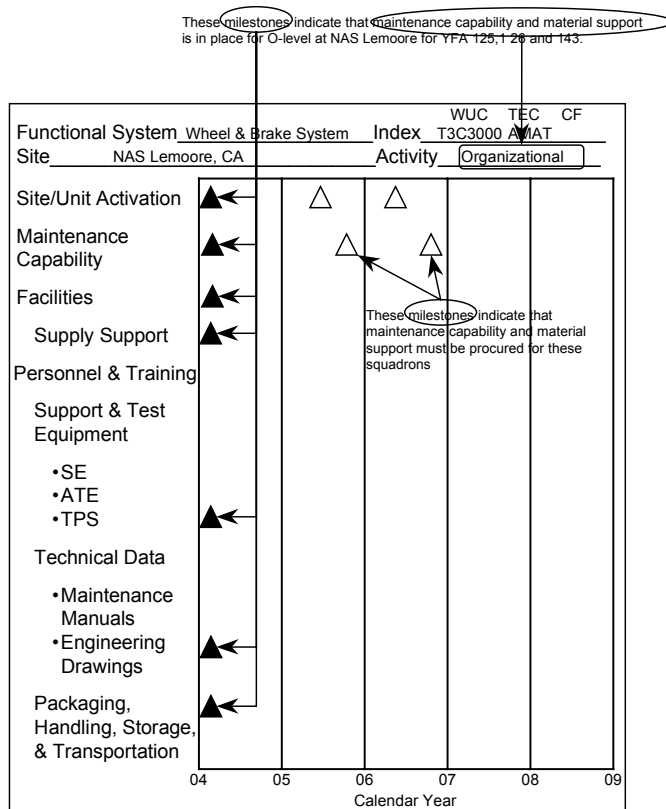


Figure H-15-5 Typical User's Logistics Support Summary Schedules

# APPENDIX I

## TECHNICAL DATA

### Table of Contents

I-1 TECHNICAL DATA

I

## I-1 TECHNICAL DATA

**WHO** - APML, NAVAIR: PAX: 3.3, Prime Contractor

### **WHAT –**

#### ***Technical Data Package (TDP):***

- A technical description of an item adequate for supporting an acquisition strategy, development, manufacturing development, production, engineering, and logistics throughout the item's life cycle.
- Defines the required design configuration and procedures to ensure adequacy of item performance
- Consists of all applicable technical data including:
  - Drawings
  - Associated lists
  - Specifications
  - Standards
  - Performance requirements
  - QA provisions
  - Reliability Data
  - Modeling Data
  - Packaging details

#### ***Technical Manuals (TMs):*** (see reference, NAVAIR 00-25-100)

- Books and other media formats providing information that is intended for Navy users and containing a description of equipment, weapons, or systems, with instructions for their effective use
- Types:
  - Operational
  - Maintenance

### **WHY –**

- ***Technical Data:***
  - Developed to provide information to enable planning for maintenance, supply support, Configuration Management, training, and other engineering and Product Support activities.
  - Technical Data provides information for the development of acquisition, operation, and Product Support objectives. Technical Data is provided in multi-media formats.
- ***Technical Manual:***
  - Technical manuals are essential in achieving system and equipment effectiveness and readiness. Like the specialized equipment procured for logistic support, the technical manual is a maintenance tool.

**WHEN** – Throughout the system life cycle

**WHERE** - NAVAIR, IPT, FST, Prime Contractor

**HOW** –

- **Technical Data Packages:**
  - AIR-3.3 will provide assistance in developing data packages required for item acquisitions
  - Procured using data acquisition documents that are those Data Item Descriptions (DID's), specifications, and standards listed in DOD 5010.12-L, or one-time DID's prepared and approved.
  - The data acquisition documents are intended to be tailored to satisfy the data requirements of the specific contract.
  - Failure to tailor data acquisition documents can lead to increased cost and schedule delays.
  - AIR-3.3 can tailor and streamline your data requirements for your program's TDP's.
  - The *APML together with AIR 3.3* plans, acquires, manages, administers, and provides manuals & engineering drawings including those stored in repositories. AIR 3.3 is responsible for:
    - Technical Data policy
    - Technical Data management
    - Requirements determination for Technical Data
    - Technical Data Repository
    - Technical Data Package acceptance
    - Technical Data distribution
    - Technical Data Logistics Management (TD/TM LEMs)
    - Configuration Management support
    - Training Device Manuals, P-Pubs
- **Technical Manuals:**
  - The **LEM** assigned by AIR 3.3, will provide process management for all system technical manual requirements.



**Types Of Technical Manuals:** The most commonly acquired types of system and equipment manuals are:

- Topically Oriented System/Equipment Manual, meeting the content requirements of MILM- 15071 (Navy), “Manuals, Technical: Equipment and Systems, Content Requirements for
- Work Package Concept Manual, meeting the content requirements of MIL-M-81927, “Manuals, Technical: General Style and Format of (Work Package Concept)”
- Functionally Oriented System/Equipment Manual, meeting the content requirements of MIL-M-241005, “Manuals, Technical: Functionally Oriented Maintenance Manuals (FOMM) for Equipment and Systems”
- Technical/Maintenance, Overhaul, and Repair Standard, meeting the content requirements of DoD-STD-2147 “Technical Repair Standards (TRSs); Hull, Mechanical, and Electrical (HM&E) Preparation of (Metric)”
- Commercial Equipment Manual, meeting the content requirements of MIL-M-7298, “Manuals, Technical: Commercial Equipment”
- **TM Management Practices:**
  - TMs must be prepared to implement:
    - Preliminary maintenance plans prepared during the System Development and Demonstration (SD&D) phase
    - Level Of Repair Analysis (LORA) decisions made during the SD&D phase
    - The final maintenance plan prepared prior to Milestone C and updated as required during the production and Deployment (P&D) and Operation and Support (O&S) phases
  - In addition, the breakdown of TMs (documented in a TM organizational plan) will be based upon the normal breakdown of repair assignments within ship- and shore-based work centers. For example, separate TMs are generally prepared for ship systems and equipment and for aircraft line replaceable units.
    - TMs (and all other items of logistic support) must be concurrently available to match the configurations of deployed systems.
    - TMs are acquired as a separately priced Contract Line Item (CLI) or acquired on a separate requirements contract.

**TM IPRs, Validation (VAL), and Verification (VER):**

- A variety of reviews and other quality control techniques are employed by the government and by the preparing activity to build quality into the TMs as they are being developed.
- The preparing activity should always be ready to respond effectively to visits

from the contracting or requiring activity.

- Required activities are to maintain an effective management monitoring program.
- For TMs, such reviews will normally occur during the IPT, TMMT, Quality Program Review (QPR), and IPR meetings.

***IPRs:***

- IPRs normally employed:
  - *The Quality Program Review (QPR):*
    - looks at the contractor's organization, procedures, and records
    - examining the relationship between the contractor's engineering, data preparation and QA personnel
    - gauging the adequacy of source data management and subcontractor and vendor controls
  - *The Adequacy Review:*
    - looks at TM content and assesses its relevancy, comprehensibility, usefulness, and compliance to specifications.
    - conducted at selected milestones along the development path

***Validation:***

- The contractor is responsible for validating the TMs.
- The validation requirement is established in the TMCR and is a contractual obligation.
- The contractor develops and submits a validation plan for Navy review and approval.
- The Navy must ensure that the validation is performed adequately and that all discrepancies identified during the validation are corrected before the manuals are submitted for acceptance.
- The Navy can carry out its oversight responsibilities by witnessing the validation and reviewing the documentation coming from the process.
  - The principles of operation, system and component descriptions, maintenance codes, and schematic and wiring diagrams are validated against engineering source data. Operation and maintenance procedures (e.g., checkout, calibration, alignment, system test, and scheduled removal and replacement instructions) are validated using an Engineering Development Model (EDM) or Low-Rate Initial Production (LRIP) system. Validation is performed in a facility that matches as closely as possible the field or shipboard maintenance facility in which actual maintenance work will take place.

- The validation uses only Government-approved support equipment. The contractor may provide it or the government may supply Government-Furnished Equipment (GFE).
- Malfunctions are not routinely introduced during validation, but they may be if specifically required to test a system or certify a procedure. The validation follows a seven-step process:

Step 1: Schedule the time and location and select the appropriate people (considering the skills required) for the job.

Step 2: Assemble the necessary tools and test equipment.

Step 3: Brief the participants on the validation plan and its objectives.

Step 4: Review each TM being validated to ensure that all of the latest changes have been made.

Step 5: Conduct a “tabletop” review to compare descriptive material; reliability data; SM&R codes; and schematics and wiring diagrams in the manuals with engineering source data.

Step 6: Perform all operations and maintenance tasks on the EDM or LRIP system, or equipment following instructions in the TMs.

Step 7: Record all discrepancies.

#### **Verification:**

- **Verification** is the formal QA action that the Navy takes to determine whether a TM will serve its intended purpose. Verification ensures that each TM:
  - Accurately reflects the configuration of the EDM or LRIP system or equipment
  - Is complete, correct, and usable in the environment for which it is intended, and can be understood by its users
  - Identifies the appropriate rating or military occupational specialty to perform selected sample procedures
  - Complies with the provisions of the procurement (i.e., contractual) documents
  - The contractor keeps the validation records, maintaining a separate set for each TM or each volume of a TM. These records reflect corrective actions taken on all discrepancies. Upon completion, the contractor signs off on a validation certificate that is retained by the Administrative Contracting Officer (ACO).
- **Verification Plan** is;
  - often prepared by the contractor when the Navy intends for the contractor to support the verification effort.

- Usually suggests a scenario, a site, participants, and a schedule, and identifies required resources.
- The contractor may be required to prepare a verification plan for Navy approval.
  - Verification takes place at a site selected by the program manager in coordination with the contractor and the fleet activity that will supply the fleet personnel who will perform the verification.
  - Discrepancies that surface during the verification process are recorded and followed up until they are corrected.

***Interactive Electronic Technical Manual System (IETMS):***

- A computer-based collection of information needed for the diagnosis and maintenance of a weapons system optically arranged and formatted for interactive presentation on an electronic display system;
  - It's prepared with an automated authoring system that is the system that links all the pertinent information
  - It's designed for electronic-window display
  - It's designed for a Portable Electronic Display Device (PEDD) such as a desktop or laptop PC or other portable electronic display device
  - The elements of technical data are interrelated, meaning that the user is able to access the information through a variety of paths
  - It can function interactively to provide supplemental information such as procedural guidance, navigational directions, and assistance in logistic-support functions supplemental to maintenance.
- Digital TMs have been generalized into five classes;
  - These classes range from elementary electronically indexed page images to an interactive electronic information system built around an integrated database.
  - The classes are defined in fairly broad, general terms that necessarily overlap.
  - They are insufficient to serve as a basis for contractual use (e.g., direct the Contractor to prepare a "Class 3" manual). The SOW, SOO, or TMCR should specify exact functionality requirements without referring to this set of definitions.
- The five Classes of IETMs are:
  - Basic ETMs: Class 1 -- Electronically Indexed Page Images
  - Advanced IETMs: Class 2 -- Electronic Scrolling Documents

- Advanced IETMs: Class 3 -- Linearly Structured IETMs
- Extended IETMs: Class 4 -- Hierarchically Structured IETMs
- Extended IETMs: Class 5 -- Integrated Data Base IETMs

***Portable Electronic Display Device (PEDD):***

- The PEDD Portable Electronic Display Device is used to aid the maintenance technician through maintenance procedures.
- Types of PEDDs:
  - Desk top computers
  - Notebooks
  - Flat panel displays
  - Hand held
  - Eye piece displays

***Technical Data Management:***

***Configuration Management of Data:***

- The activities apply to configuration documentation.
  - Most of the activities apply to all data.
  - The process is driven by business rules established based on the contractor process as adjusted to accommodate the Government's Concept of Operations (GCO) for processing digital data and specific contract data requirements.
  - It assumes a data workflow that encompasses four progressive status categories of digital data files.
    1. *Working data*, where the data is under the originator's control only.
    2. *Released data*, where working data has been approved by the contractor's established approval process, released for its intended use, and is now subject to contractor configuration control procedures.
    3. *Submitted data*, where contractor released data has been formally submitted to the Government for approval.
    4. *Approved data*, where contractor submitted data has been approved for its intended use by the Government. When the data process is initiated to create or revise an item of data or to perform any of the actions necessary to bring it from one status level to the next the various rule sets illustrated in the figure are triggered to facilitate the work flow. The result is a data product with:
      - Appropriate document, document representation, and data file identification
      - Version control
      - Clear and unambiguous relationships to the product configuration with

which it is associated and to the changes that delineate each configuration of the product.

- The data is available for access in accordance with contractually agreed to rules for submittal, transmission, or on-line access (as appropriate), in the prescribed format (document representation) that can be used by the application software available to the authorized user.
- Management principles ensure the integrity of digital representations of product information and other data and enhance good data management practice.
- The concepts are described, as follows:
  - Document identification
  - Data status level management
  - Data and product configuration relationships
  - Data version control and management of review, comment, annotation, and disposition
  - Digital data transmittal
  - Data access control

***Document Identification:***

- Each document reflecting performance, functional, or physical requirements or other product related information is given a unique identifier so that it can be:
  - Correctly associated with the applicable configuration (product identifier and revision) of the associated item
  - Referred to precisely
  - Retrieved when necessary
- With emphasis on the acquisition of commercial products and the use of industry methods, it is inappropriate for the military to specify one format for document identifiers. Except for MIL documents and program unique specifications, whose identifiers are governed by MIL-STDs-961 and 962, document identifier formats are determined by document originators. Generally they include all or most of the following parameters:
  - Date
  - Assigned numeric or alpha numeric identifier unique to the document
  - Revision indicator
  - Type of document
  - Title or subject
  - Originator and/or Organization
- A document iteration is uniquely identified by a combination of,
  - Document source (CAGE code, organizational acronym, or company name)
  - Document identifier (number or title)
  - Document type
  - Revision indicator (letter, number, or date)

- A document is digitally represented by one or more electronic data files. Each document representation is the complete set of all individual digital data files (e.g., word processor, CAD/CAM, graphics, database, spreadsheet, software) constituting one document. The same document can have several different, equally valid, representations such as different word processing or standard neutral formats (IGES, ASCII, SGML-tagged ASCII,). Any individual file such as a raster graphics file, an ASCII file, or a spreadsheet file may be part of several document representations of the same document and/or same revision, same document and different revision, or different document. The business rules relating documents, documentation representations and files are as follows:
  1. Each document iteration exists as one or more document representations, identified by:
    - Document identifier
    - Document representation identifier
    - Document representation revision identifier
  2. Each document representation is comprised of zero or more files. To facilitate proper relationships, apply the following digital data identification rules to maintain document, document representation, and file version relationships:
    - Assign a unique identifier to each file,
    - Assign a unique identifier to each document representation,
    - Assign a version identifier to each file,
    - Maintain, in a database, the relationship between:
      - Document identifier and its revision level,
      - Associated document representations,
      - File identifiers and versions, and
      - Retain multiple versions of files as necessary to recreate prior document revisions and provide a traceable history of each document
    - Identify the tool and version of the tool (e.g., MSWord 2000) used to generate the document when the document is not in neutral format.

***Data Status Level Management:***

- Document status level is important as a foundation for business rules defining access, change management, and archiving digital data documents. Document status level provides the basis for establishing data workflow management and enhances data integrity.
- The standard data life cycle model shows the data status levels (also referred to as states) that a specific document and/or document revision is processed through in its life cycle. Data status levels were initially defined in MIL-HDBK-59A (CALS Handbook, now cancelled). They were also defined in MIL-STD 974 "Contractor Integrated Technical Information Services (CITIS)" and in EIA Standard 649. The definitions of data status terms follow. Key changes from the previous definitions are highlighted and rationale for the differences is provided:



- *Working* is the status used to identify data (e.g., document representations or document revisions. There can be multiple representations of a document revision.) that is in preparation – a work in progress that is subject to unilateral change by the originator. Each design activity may define any number of subordinate states within the working category to define the unique processes that different document types go through before release in their organization.
  - *Released* is the status of document representations (and revisions) that have been reviewed and authorized for use (such as for manufacture or for submittal to or access by, a customer or supplier). Released data is under originating organization (for example, a contractor) change management rules that prohibit a new revision of the document representation from replacing a released revision of a document representation until it has also been reviewed and authorized by the appropriate authority. The content of a document representation revision is fixed once it is in the released state. It is only changed by release of a superseding document representation revision. Once a document (or document revision) is in the approved state, changes are made only by release of a new document representation related to the next document revision. Note that released status is reserved for document representation revisions rather than document revisions allowing the enterprise to release and iterate document representations without changing the document revision. This enables representations of proposed revisions to Rev A of a document to be reviewed, revised, and reissued several times before a satisfactory Rev B (document) is issued.
  - Submitted data is a proposed or approved document revision in the form of a released document representation that has been made available for customer review. This status applies only to data that requires submittal to or access by a customer (usually the government).
1. If a submitted document revision that has not been approved is commented on or disapproved a new working revision of the related document representation may be started and eventually be submitted to replace the original document representation without affecting the identifier proposed for the new document revision. This definition of submitted applies the concept discussed in above and recognizes that there are two conditions that apply to submitted data, approved data (see definition) and unapproved data. The document approval model does not put submitted sequentially after released. If the contractor is the CDCA it may approve before submitting, it may approve without submitting, and/or it may release a document representation as a draft of the new revision and submit it for review before approving the document. If the contractor is not the CDCA it must release a document representation before submitting it to the CDCA for approval of the document revision.



2. If a submitted document revision that has been approved is commented on or disapproved by the customer a new working representation of the next document revision may be started and eventually replace the original document revision. Approved is the status of documents and document revisions signifying that the data (document revision) has been approved by the CDCA of the document. The content of a document revision is fixed once it is in the approved state. It is only changed by approval of a superseding document revision. Some tools include Archived as a data status for document representations and/or documents. (As did MIL-HDBK-59, MIL-STD-974, and EIA-649). This status is independent of the approval status (released, submitted, and approved) and merely means that the data has been removed from an active access storage mode. The definition simply recognizes that archived status is an indicator of the location of the data rather than a true status indicator. Archived is a tool and/or memory dependant condition. No changes are allowed in document representations that progress to the released state or in document revisions that progress to the approved state. If there are changes to be made they are accomplished by the generation and release or approval of a new revision. Documents must have at least one released document representation in order to be approved by the CDCA or submitted to a non-CDCA customer for review and adoption. Some data will exist only at the working level. Business rules related to document and/or data status apply to each document type by defining requirements such as:

- Whether submittal to (or access by) customers is required.
- In which application software and data format is submittal and/or access required.
- Who will be granted access privileges to the data in each of the applicable states.
- What are the approval requirements (reviewers and/or approvers) and method of approval (e.g., electronic signature) to promote a document to the released state, the approved state?
- What are the archiving rules for this document type (e.g., all released versions upon release of a superseding version, all released versions, 90 days after release of a superseding version, etc.)?

***Data and Product Configuration Relationships:***

- A product data management system provides a system to maintain relationships between digital data, data requirements, and related product configuration so that the correct revision of an item of data can be accessed or retrieved when needed. Data files are related to documents via document representations. Each product document with a specific source, document type, document identifier (title, name, and number), and document revision identifier, may have the following relationships:
  - Program or project and/or contractual agreement

- Contract data item identifiers
  - Document revision and/or change authorization
  - Associated product (hardware or software) name
  - Associated product (end item), part or software identifying number and revision and/or version identifier, where applicable
  - Effectivity in terms of end item serial numbers for the associated product, part, and software item
  - Status (working, released, submitted, approved, archived) of the data
  - Associated data - document name, document title, document revision number, and date
  - Associated correspondence - document number, subject, date, and references
- Business rules for document retrieval should use these relationships within a database to ensure the integrity of data that users may extract. Information concerning a given product or part is associated with the configuration and effectivity (serial number) of the end item that uses the part. This capability is significant during the operation and support phase when data is needed for maintenance and to determine replacement parts for a specific end item.

***Data Version Control:***

- Disciplined version control of data files is the prerequisite to effective electronic management of digital documentation and is encompassed within product data management software. Version identification occurs whenever a file is changed. The simplest form of version management is the file save feature (incorporated in application software) that advances the file date and time identification each time a file is saved. To retain the superseded version, it must be renamed. True version control business rules require automatic version identifier advance whenever a file is revised and not when the file is saved without change. Furthermore, they require all versions to be retained, subject to archiving guidelines and special rules pertinent to specific document types. Since a single document representation can consist of many files a disciplined process is necessary to manage a document review process electronically. Version control rules facilitate establishment of an audit trail of comments and annotations by reviewers and the disposition of each comment. Each version of each document representation provided to or received from each reviewer is uniquely identified and associated with the source of the comment. This means that a reviewer's version of a set of files (document representation) constituting a document being reviewed is re-named to enable the annotated comment copy to be distinguished from the official current version of the document.

***Digital Data Transmittal:***

- Part of the obligation of the sender of any document, regardless of transmission method, is to make sure that the document is in a format (document representation) that can be read by the receiver and converted to human readable form. Appropriate identification is affixed to physical media such as

floppy disks or tapes to clearly identify its contents. If all of the file identifications cannot be included on the label, a directory reference to an accompanying listing or to a read.me file is used.

- EIA-STD-649 lists the following common sense guidelines for information to be provided to the user (via such means as "read.me" files, reference to standard protocols, and on-line help where applicable):
  - Identification of files included in the transfer by file name, description, version, data status level, application/file type and application version.
  - Applicable references to associate the data with the basis (requirement) for its transmittal, approval, and payment, where applicable.
  - If there are multiple files such as separate text and graphics, how to assemble each included data item for reading, review, or annotation, as applicable.
  - The naming convention for file versions and data status level distinguishes altered (for example, annotated or red-line strike-out) file versions from unaltered files.
  - If and how changes from previous versions are indicated.
  - How to acknowledge receipt of the data, provide comments, and/or indicate disposition of the data digitally.
  - Time constraints, if any, relating to review and disposition.

***Data Access Control:***

- Access to digital data involves retrieving appropriate files necessary to compile the correct version of each digital data document, view it, and perform prescribed processing. Seeking digital data access should be as user-friendly as possible. Users should be provided with data and/or documents they are entitled to in the correct revision and/or version. Before this can be accomplished there are a parameters for access privileges, security, and protection of data rights that must be set-up. Access privileges limit access to applicable users. Access privileges vary according to the individual's credentials (security clearance, need to know, organizational affiliation, etc.), data status level, document type, program milestones, and user need predetermined from the government's concept of operations. Users of accessed data must respect contractual and legal requirements for data rights, security, licenses, copyrights, and other distribution restrictions that apply to the data. The applicable distribution code (which represents the type of distribution statement) is affixed to a document or viewable file to indicate the authorized circulation or dissemination of the information contained in the item. Typically, working data is made available only to the originating individual, group, or team (such as an integrated product development team) or to other designated reviewers of the data. If the government is a direct

participant in the team, government team members are afforded the same access as the other members. In-plant government representatives have the right to request any and all data generated as part of the contract to which they have oversight responsibility. The contractor can determine the means of providing that access. With these exceptions government access to digital data (including data retrieved from databases) is limited to contractually stipulated released, submitted, and approved data. EIA-STD-649 provides the following checklist of ground rules to be pre-established prior to initiating interactive access (i.e., pre-defined query and extraction of data):

- How data is to be accessed
- Request for access and logging of access for read-only or annotation
- Naming of temporary working version of files for annotation and/or mark up
- Means of indicating whether a comment and/or annotation is essential or suggested
- Re-identification of marked up versions, as required
- Method of indicating acceptance, approval, or rejection, as applicable
- Time constraints, if any, on data acceptance
- Tracking of disposition of required actions
- Re-identification of changed files.

#### ***Data Management Activity Guides:***

##### ***Document Identification:***

- Document identification provides guidance in understanding the possible data identification relationships that the government can expect to see when dealing with a variety of documents originating from many different sources. Each document is identified uniquely by the combination of its source, its identifier, and its document type. A document identifier can include a number and a title or either a number or a title. A numbered document may have a CAGE code, a company name, or an organizational acronym identifying its source. Certain document types are associated with each type of source.

##### ***Data Acquisition Guidance:***

- Actions required to define digital data for delivery to or access by the government in general and for configuration management data in particular. With interactive access the emphasis is on government access to contractor maintained databases. Requirements for digital data are defined in the Contract Data Requirements List (CDRL).

#### ***Type of Factor Description Considerations, Notes:***

- ***Input:*** CITIS services required.
  - Determination what documents will be required to be made available using the contractor/government concept of operations.
  - The contract calls for integrated technical information services interactions which requires the actions that the government intends to take with each particular type data (e.g., view, comment, approve, combine, download,

edit, forward, query, sort program milestones delivery requirement with respect to specific program events. e.g., 30 days prior to PDR) sow requirement.

- The statement of work task to which the data is associated, or which specifies a data task
  - Approval requirement
    - Documents submitted pursuant to each CDRL are required to be approved by the government or are merely for information purposes
    - Documents that are approved by the government should be limited to government configuration baseline documents wherever possible
  - Baseline requirement
    - The document type, when approved, will constitute a government configuration baseline.

### **Constraints**

- Government infrastructure
  - The capabilities of each of the government activities that need to view or use the data.
  - The means of data access (e.g., CITIS, direct input to CMIS, etc.) must be matched to the facilities, equipment and environment of the using community.
  - Security classification and data rights.
  - Whether the data will be classified and to what levels of classification.
  - Whether the government anticipates that these factors can influence the processing rules and choices of output media, they will have unlimited rights to the data provided.

### **MECHANISMS/FACILITATORS:**

- Government Concept of Operations (GCO):
  - identifies expected government infrastructure at all of the participating sites and agencies
  - Influences services, media and access to be ordered
  - Data media selection guidelines (government preferences for types of media to be used for various document types)
  - Helpful to have a pre-planned priority list of media preferences to match with contractor Proposals Data work flow process aides in determining necessary lead time. A work flow process defining the actions that Government will perform on data that is submitted or provided for access Documents Government process from submittal by contractor to disposition Data access rules A set of ground rules that is agreed to with the contractor governing both government and contractor access to data Use to formulate specific access privileges.

**APML ROLE –**

- Initiates the required supportability analyses for the system requirements
- Ensures coordination occurs with AIR-3.3 TDP POC for technical manuals and data requirements planning
- Ensures budget and funding are identified and executed to provide requirements for the user
- Ensures the ALSP reflects the requirements planning information for the system life cycle
- Ensures all data and technical manual requirements are executed and sustained to the plan.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.3	Technical Data LEM		

**REF-**

DEPSECDEF Memo dtd 30 October 2002

NAVAIR 00-25-100 NAVAIR Technical Manual Program

DoD 5010.12-M Procedures for the Acquisition and Management of Technical

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://nsdsa.phdnswc.navy.mil/tmmp/0025100/wp2.htm>

002 00 Introduction NAVAIRSYSCOM Technical Manual Program

<https://www.nalda.navy.mil/techdata/>

Logistics Toolbox

<http://www.natec.navy.mil/>

Naval Air Technical Data and Engineering Service Command Web Site

<http://navycals.dt.navy.mil/ietm/ietm.html>

Interactive Electronics Technical Manual

[HelpDesk6@navair.navy.mil](mailto:HelpDesk6@navair.navy.mil)

[irac@navair.navy.mil](mailto:irac@navair.navy.mil)

[tpdr@navair.navy.mil](mailto:tpdr@navair.navy.mil)

[adrl@navair.navy.mil](mailto:adrl@navair.navy.mil)

[techdirectives@navair.navy.mil](mailto:techdirectives@navair.navy.mil)

[Program Manager's Desktop Guide for Continuous Acquisition and Life-Cycle Support \(CALS\) Implementation 14 March 1997](#)

Section 5 Guide for Developing a CALS Government Concept of Operations (GCO)  
(Discretionary)

# **APPENDIX J**

## **SUPPLY SUPPORT**

### **Table of Contents**

J-1 –SUPPLY SUPPORT

J-2 - RECLAMATION IN LIEU OF PROCUREMENT (RILOP)/STRIKEN AIRCRAFT  
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J-4 - SPARES REQUIREMENTS DETERMINATION

J-5 - SUPPLY SUPPORT MANAGEMENT PLAN (SSMP)

J-6 – AVCAL/SHORCAL



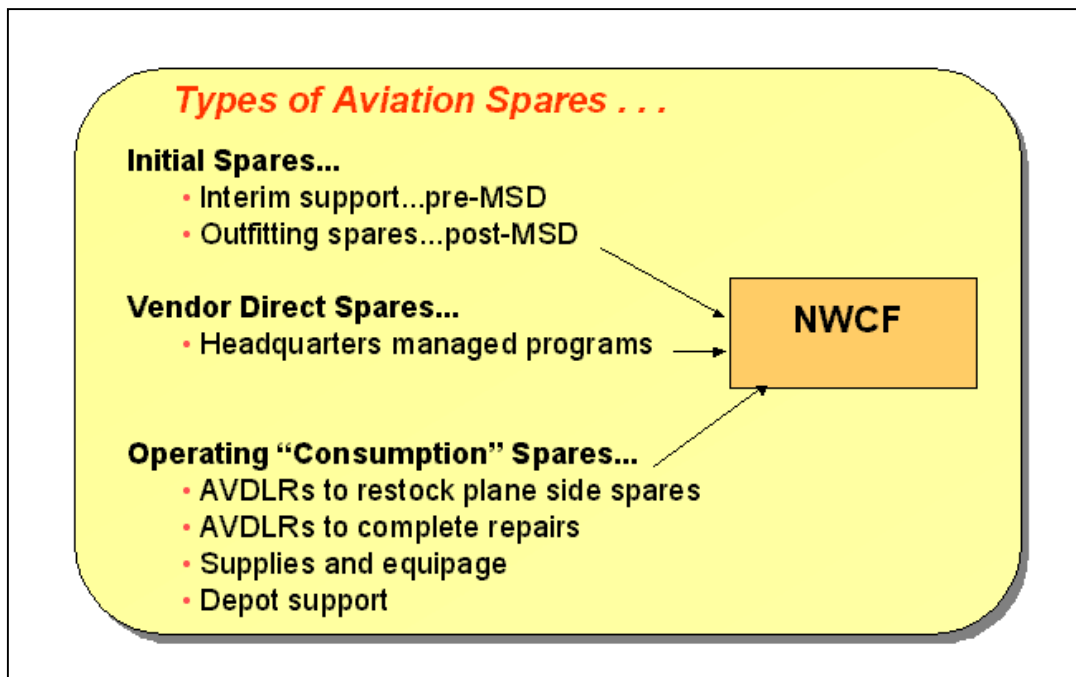
## J-1 - SUPPLY SUPPORT

**WHO** – OPNAV, NAVAIR, APML, NAVICP, Fleet

**WHAT** –

**Supply Support:** The process to determine, acquire, catalog, receive, store, transfer, issue, and dispose of secondary items necessary for the support of end items and support items (such as support and test equipment, trainers, and simulators) that meet the user's peacetime and wartime readiness requirements.

- Initial support (provisioning)
- Follow-on requirements (routine replenishment). Acquisition logistics efforts should strive to reduce the variety of parts and maximize the standardization of parts used in end items and support items.



**WHY** – Ensure the system meets the intended operational performance objectives including, availability, supportability and cost.

**WHEN** – Concept Exploration and Demonstration initially, and SD&D and throughout the system life cycle

**WHERE** – OPNAV, NAVAIR, NAVICP, IPTs, Fleet, Prime Contractor

***Problems and Difficulties...***

- A lack of interim spares can create difficulties within the Aviation Outfitting Account.
- A poor development of the introduction of pre-MSD interim spares can lead to reliance on AOA to provide initial spares to the Fleet. This can produce “lead-time-away” problems associated with the “buy-in/buy-out” function of the NWCF/APN-6 relationship.

**HOW –**

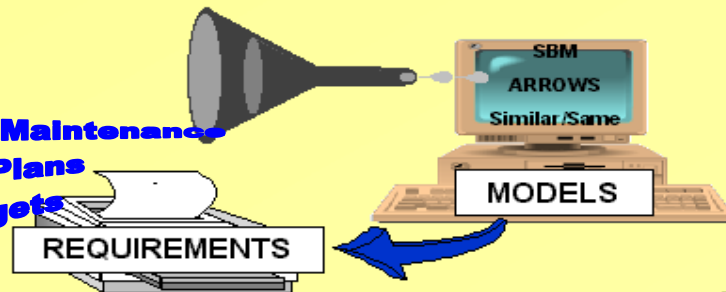
- Establishment of the Supply Support management team
- Develop the SSMP:
  - The supply milestone plan that defines the provisioning schedule for a given system
  - Developed for all new system introductions and modifications which will involve interim support
  - Lays out a schedule to reach the Material Support Date (MSD), the dividing line between interim and Navy support
  - When developed, the SSMP must be concurred with by the applicable APML
  - Supply Support LEM will prepare a SSMP tailored to reflect the specific program involved
  - For new systems, the SSMP should be prepared and submitted for review as soon as program definition and schedules are established
  - For modification programs, an SSMP should be developed and forwarded for review to NAVAIR as part of the ECP review cycle
  - Because of budgetary impacts, it is imperative that the LEM continually monitor the SSMP milestones and revise the SSMP at the earliest date that a milestone slip will result in a slip in MSD.
- Determine provisioning documentation and data requirements
- Determine contracting strategy for supply support requirements
- Initiate spares contract

### APN-6 Requirements Definition . . .

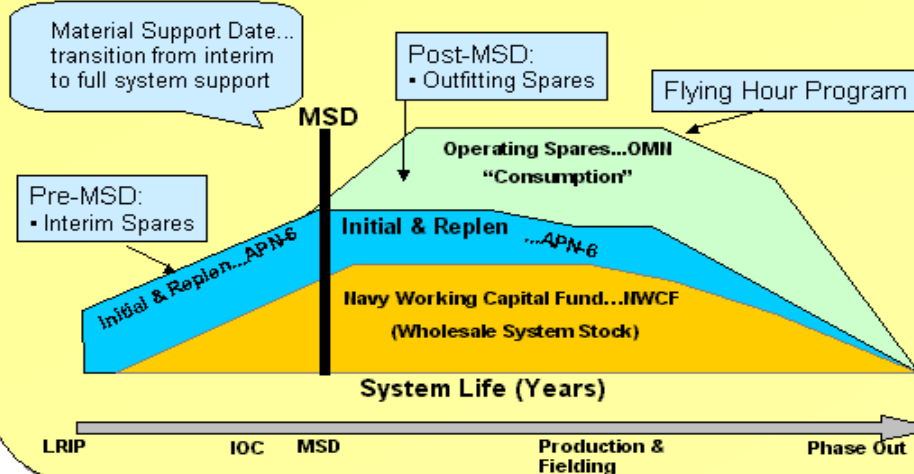
What is the "Requirement"?

- Based on End Item Budgets, Baseload & Usage Data, Cost Sheets, Maintenance Plans.
- Budget forecast to support Weapon Systems.

Baseline Data  
Cost Sheets  
Usage Tools - Maintenance  
Maintenance Plans  
End Item Budgets



### Interface between types of Aviation Spares . . .



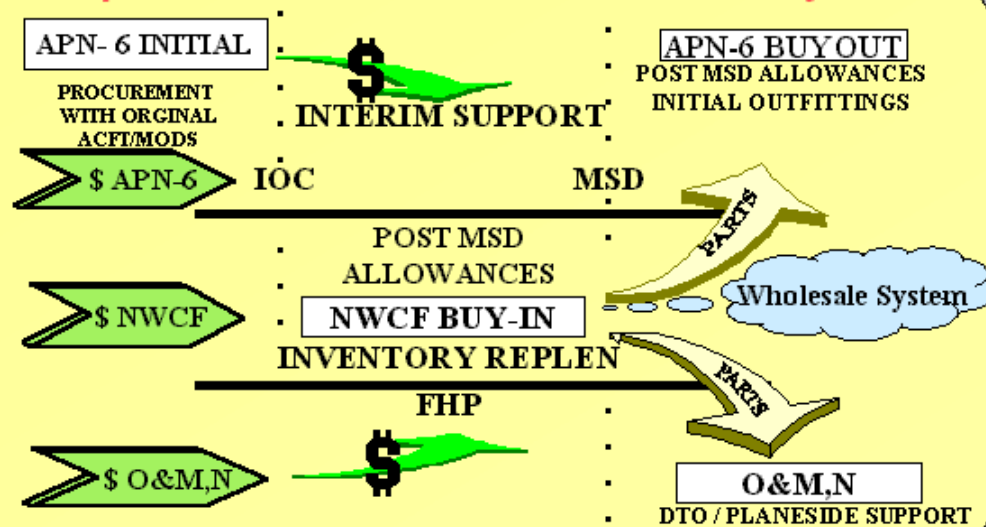
### Funding & Sponsoring of Spares . . . APN-6 . . .

Repairable Parts, Repair Parts & Repair Costs.  
O-level and I-level initial inventory stock.  
Aircraft Procurement, Navy / APN-6

Sponsored  
by N781E

- **Interim Support Spares - Pre-MSD**
  - Engines / Contractor Spares / PSE
  - Mod spares & ATE / CSE / CASS / Training Devices
- **Outfitting Spares - Post MSD**
  - AVCAL / SHORCAL / CAVCAL [AOA]
- **Replenishment**
  - Executive Mission / Adversary Aircraft / Special Programs
  - Containers

### Spares Procurement & Material Delivery . . .



- Identify the modeling tool for (SBM, RBS, ARROWS) spares requirements determination
- Identify spares budget including Interim Supply Support requirements, initial (Interim) spares, Repair of Repairables, and replenishment items
- Initiate contract
- Develop provisioning data base to establish master data file for system spares life cycle inventory management
- Establish allowance requirements for support sites
- Determine transportation requirements and priorities
- Initiate ISS plan for interim support prior to MSD
- Ensure supply support planning and requirements are identified in the system program ALSP

**APML ROLE –**

- Initiate interface with supply support LEM (ICP) to establish system program requirements and planning
- Ensure requirements are based on approved Maintenance Plan
- Ensure supply support requirements are identified in system ALSP, LRFS and budget documentation
- Ensure PBL opportunities are fully evaluated for system application
- Ensure support contracts include all supply support data requirements for provisioning, and that delivery of the data reflects system and product support milestones
- Ensure SSMP reflects adequate planning to meet LEM, Fleet and system program schedules for system introduction and support
- Execute supply support planning to ensure funding, ISS requirements, adequate spares, repair parts, repair contracts, transportation occurs to ensure expected fleet readiness and support objectives are achieved and maintained throughout the system life cycle

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
	Weapons System Manager/Applicable Supply Support LEM	NAVICP	
AIR-3.5	PBL/Material Management	NAVAIR HQ	

## REF –

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

Contracting for Supportability Guide

MIL-HDBK-502 ALH

ALSP Guide

NAVICP INSTRUCTION 4400.18D Interim Supply Support for Aviation Weapon Systems and Support Equipment

NAVICPINST 4105.4, ISS

## LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

<http://www.navicp.navy.mil/03/036/0362/index.htm>

NAVICP - Life Cycle Management

[NAVICP's Knowledge Management System \(KMS\)](#)

Same as Title

[http://www.navicp.navy.mil/03/036/0362/iss\\_440018d\\_27\\_nov00\\_final.doc](http://www.navicp.navy.mil/03/036/0362/iss_440018d_27_nov00_final.doc)

NAVICPINST 4400.18D – Interim supply Support for Aviation Weapons Systems and Support Equipment

<http://aicpm16.icpmech.navy.mil/kms/kms.nsf>

ISS INST4105.4A

<https://www.nalda.navy.mil/apmlms/library.html>

APN 6 APML Training Overview

## **J-2 – RECLAMATION IN LIEU OF PROCUREMENT (RILOP) / STRICKEN AIRCRAFT RECLAMATION DISPOSAL PROGRAM (SARDIP)**

**WHO** – OPNAV, APML, NAVICP, Fleet

**WHAT** –

- **RILOP** stands for “Reclamation In Lieu Of Procurement”. This is a process used to salvage usable parts and components from aircraft engines processed for disposal. The NAVICP is the responsible agency. The process is started by direction from OPNAV to dispose of designated engines.
- **SARDIP** stands for “Stricken Aircraft Reclamation Disposal Program”. When OPNAV issues an order to strike an aircraft the NAVICP determines the availability of the aircraft to be processed and then establishes tasking necessary to carry out reclamation or disposal.

**WHY** –

- Salvaging usable assets for support of in-service systems and/or international customer support requirements.
- Reclaiming usable assets from stricken aircraft and equipment for continued use. Disposing of the remaining non-usable material.

**WHEN** – Events occur which dictate the initiation of these processes to fulfill the Programs, User’s and Government’s requirements.

**WHERE** – NAVAIR, NAVICP, Fleet, Designated facility.

**HOW** – Ensure specific requirements when requested are initiated, coordinated and executed to policy and procedures, provided by the User and NAVICP POC below.

**APML ROLE** – Ensure actions are coordinated within the IPT when implementation of the RILOP/SARDIP process is required.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
	RILOP	NAVICP	(215) 697-5424
	SARDIP	NAVICP	(215) 697-2882

**REF –**

DoD 4160.21-M Defense Materiel Disposition Manual

[OPNAVINST 13000.6](#)

**LINKS –**

[DoD 4160.21-M Defense Materiel Disposition Manual August 1997](#)

Chapter 7 Sales, Resource Recovery and Recycling Program (Mandatory)

<http://neds.nebt.daps.mil/directives/13000%5F6.pdf>

OPNAVINST 13000.6 – Management of the Inactive Aircraft Inventory



## J-3 - REPAIR OF REPAIRABLES (ROR)

**WHO** – APML, NAVICP, Fleet, Prime Contractor

**WHAT** – *Prior to Organic repair capability being established:* Providing a contractual means (Production Contract / Basic Ordering Agreement (BOA)) for the capability to inspect, test, disassemble, repair, re-assemble, test and return to a Ready For Issue (RFI) condition, all repairable components removed from production aircraft and or support equipment items following delivery to the user.

- Prior to organic developing organic capability. Components purchased to support the systems and equipment delivered prior to organic maintenance repair capability initially following delivery to the user Component Repair (ROR) Program supports systems and equipment as they are introduced into the fleet. During this interim period components are repaired by a contractor until a Navy capability is established for the newly introduced items. The Component Repair budget line is the only financial source available to support these requirements during the Interim Support period. The Interim Support period is that timeframe where parts have been recently introduced, there is no adequate demand history, and there is insufficient logistics data to establish complete organic supply support. The Interim Support period concludes at the Material Support Date (MSD). The NAVICP Supply Support LEM and the ROR Financial Analyst review and analyze rework requirements and provide budget justification for those requirements. They establish and maintain tracking systems to ensure funds are obligated and that all closed contracts are reconciled so that funds not required are recouped prior to their expiration.

**WHY** –

- None to limited fleet repair capability exists initially for peculiar repairable components that fail, following systems or equipment delivery
- The Prime contractor and associate sub-contractors are the only source of repair prior to the government's supportability analysis completion

**WHEN** – Milestone B, (LRIP)

**WHERE** – NAVAIR, NAVICP, Fleet, Prime Contractor

**HOW** –

- APML/NAVICP identify ROR requirement, funding and initiate coordination with contractor for requirements planning to establish capability.
- Determine or initiate a contract vehicle
- Identify ROR requirement, contract, management and process in all support planning for the interim support period prior to organic capability being established.

- Establish and maintain tracking systems to ensure funds are obligated and that all closed contracts are reconciled so that funds not required are recouped prior to their expiration.
- The NAVICP Supply Support LEM and the ROR Financial Analyst review and analyze rework requirements and provide budget justification for those requirements.
- Update, provide and defend annual ROR requirements budget
- Attend budget reviews
- NAVICP manage, track and report retrograde through the ROR process
- NAVICP transition ROR items to organic repair when capability established
- APML/NAVICP pursue PBL initiatives for alternate sources of repair and life cycle support management
- Sustain ROR capability and support as required until transition to organic or alternate repair source

#### APML ROLE –

- Ensure supply support IPT identifies ROR requirement, funding, coordination, contract establishment and management process 12 months prior to first aircraft delivery
- Review annual ROR funding requirements
- Participate in ROR status reviews (looking at top degraders, TAT, piece part shortfalls)

#### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
0131		NAVICP	DSN 442-9417
033A		NAVICP	DSN 442-3531
073	Source Dev. Dept		
0731	Airframe & Rotary Wing		(215) 697-1236 - DSN 442-1236
0732	Electronics		(215) 697-1256 - DSN 442-1256
0733	Engines		(215) 697-1248 - DSN 442-1248

#### REF – None

#### LINKS –

[http://www.navicp.navy.mil/07/repair\\_support.htm](http://www.navicp.navy.mil/07/repair_support.htm)  
Engineering & Product Support – Repair Support

## J-4 - SPARES REQUIREMENTS DETERMINATION

**WHO** – APML, NAVICP (WSM/Supply Support LEM), FST, Prime Contractor

**WHAT** – Ensuring that spares (hardware components and computer programs) and repair parts required to operate and maintain a system are provided on a timely basis.

Supply support analysis is the process conducted to determine, acquire, catalog, receive, store, transfer, issue, and dispose of secondary items necessary for the support of end items and support items (such as support and test equipment, trainers, and simulators) that meet the user's peacetime and wartime readiness requirements.

Hardware supply support consists of initial support (provisioning phase) followed by routine supply support (replenishment phase).

### **Spares Determination:**

Identification, Development, Provisioning, procurement, delivery, repair and life cycle support of spare parts, including repairable and consumable items necessary to support the system or equipment over its intended life cycle.

The Navy's Program Support Inventory Control Point (PSICP), NAVICP, is responsible for spares requirements identification, determination, provisioning, procurement, repair and life cycle support for aviation systems and equipment. Responsibilities include:

- WSM/LEM identification of spares data requirements
- Initiating repair contracts prior to organic support capability, if applicable
- Develop SSMP
- Identifying Initial Supply Support (ISS) planning
- Developing the Master Data File
- Provisioning
- Initial outfitting (PEB, AVCAL, SHORCAL)

### **Readiness Based Sparing (RBS):**

Readiness Based Sparing (RBS) is a modeling process used to compute optimum spare parts requirements to support a specified system readiness or cost objective. RBS is used to develop spares recommendations that are intended to meet a weapon system's Full Mission Capability (FMC) objective at a minimum cost. Conversely, the process can also produce an optimum spares list for a specific cost target and compute the expected readiness, which will be achieved for this cost target.

Models are used to establish funding requirements, assess funding levels, evaluate Interim Support Item List (ISIL's), and determine recommended spares buys. These tools are also utilized to determine Contractor Spares requirements for the Interim Support Period (prior to MSD).

Examples of inputs to the RBS process model:

- Operating aircraft at each site
- Aircraft utilization rates
- MRF/RPF rates for equipments
- Intermediate – level repair times
- Resupply response time and/or depot repair times
- Unit cost
- Mission essentiality
- Operational availability ( $A_o$ ) goals

In cases where data is not available for the new weapon system existing weapon system data (similar same) information is utilized. Additionally, NAVICP is responsible for the calculation of spares (APN-6) requirements for Support Equipment, Modification Spares, Repair of Repairables (ROR), Engines, 6K Cog. (Photographic, Meteorological, and Containers), and Headquarters Replenishment (Special Programs).

#### **Parts Forecasting:**

During the life cycle of a weapons system special projects or needs may arise for parts support of the equipment.

Examples are:

- TD support
- Unplanned depot repair requirements
- Surges over and above the current demand levels

Historically engineering estimates can be utilized for these type requirements, if adequate data for standard Readiness calculations is not available. Normally these forecasts will be made by the supportability IPT, in conjunction with the APML. In the event the requirement is received in a timely manner NAVICP can calculate using Availability Optimization, Awaiting Parts Optimization or Fixed Protection (Demand Based Forecasts). Depending upon the required delivery dates NAVICP can enter the requirement into the standard budget cycle or pass the requirement forward as an unplanned/ unprogrammed requirement.

**WHY** – Spares Requirements Determination is the responsibility of the Supply Support LEM located at NAVICP. The LEM ensures all required calculations are computed and are defensible at all review levels.

RBS is a spares modeling approach that recommends spares quantities to support a particular weapon system or sub-system. It is used by NAVICP to determine spares allowance requirements such as AVCALs, PUK, and CSPs for in-service systems. RBS must be used by NAVICP and the APML to project APN-6 requirements for a new/modified system. The process can also be used to produce yearly spares buy recommendations consistent with readiness targets or funding levels. It is a management tool used by NAVICP/APML to support APN-6 budget requirements for

BAM submission and provides a tool, which will quantify the impact of reduced funding levels on system readiness. Prior to the implementation of RBS, spares computation strategies were not readiness based and do not provide the user with the ability to assess weapon system performance. Because of that, spares requirements prior to RBS implementation were not consistent with attainment of performance objectives and did not provide a “Best Bang for the Buck” approach.

Unplanned/unprogrammed requirements may appear during an equipments life cycle where adequate data or time is not available to support a Readiness calculation.

Milestone B and C

**WHEN –**

- Milestone B initially, and throughout the life of the system
- RBS analysis should be used to develop spares requirements beginning with the first year of production. It can be used to develop an Interim Support Items List (ISIL) during the interim support period. It is used to support APN-6 requirements for all systems prior to the MSD. RBS is used by NAVICP to support all spares requirements for Post MSD.

**WHERE –** NAVAIR, NAVICP, Fleet, Prime Contractor

**HOW –** Contact the Supply Support WSM/LEM for the system at NAVICP Philadelphia

**APML ROLE –**

- The APML must ensure that the Supply Support LEM identifies and is provided adequate planning data and must monitor supply support requirements progress throughout the equipments life cycle.
- Ensure receipt of all data requirements and engineering forecasts are forwarded to the supply support LEM at NAVICP
- Ensure that the ARROWS RBS model is used by NAVICP to project APN-6 requirements consistent with the readiness objectives specified in the Operational Requirements Document (ORD).
- Utilize the ARROWS model to investigate the spares cost impact of changes in production schedules, maintenance concept, utilization rate and fielding schedule. Deliverables should include:
  - APN-6 Spares Budget Requirements for BAM submission
  - ISIL for spares execution for each buy year
  - Results of “What-If” analyses to assess impact of programmatic changes, support concepts and operational assumptions on spares requirements.
- Ensure supply support requirements are accomplished to meet operational performance objectives

**POC –** System or Logistics Element Manager (LEM) at NAVICP-Philadelphia

**REF –** PC ARROWS Guide

**LINKS –**

<http://www.navicp.navy.mil/>

NAVSUP – Inventory Control Point

<http://aicpm16.icpmech.navy.mil/kms/kms.nsf>

NAVICP KMS

<http://www.navicp.navy.mil/fleetlogistics/aviation.htm>

NAVICP – Integrated Logistics Support

## J-5 - SUPPLY SUPPORT MANAGEMENT PLAN (SSMP)

**WHO** – APML, NAVICP, Fleet

**WHAT** –

**Supply Support Management Plan (SSMP)**: The primary planning document which lists the major ILS supply support milestones/events for a weapon system/equipment acquisition or configuration change, with projected and actual delivery dates for each event, stated in a chronological sequence, commencing with the proposed budget and culminating with the attainment of the projected Material Support Date (MSD).

***The SSMP:***

- The supply milestone plan that defines the provisioning schedule for a given system
- Developed for all new system introductions and modifications which will involve interim support
- Lays out a schedule to reach the Material Support Date (MSD), the dividing line between interim and Navy support
- When developed, the SSMP must be concurred with by the applicable APML
- Supply Support LEM will prepare a SSMP tailored to reflect the specific program involved
- For new systems, the SSMP should be prepared and submitted for review as soon as program definition and schedules are established
- For modification programs, an SSMP should be developed and forwarded for review to NAVAIR as part of the ECP review cycle
- Because of budgetary impacts, it is imperative that the LEM continually monitor the SSMP milestones and revise the SSMP at the earliest date that a milestone slip will result in a slip in MSD.

**WHY** – The SSMP is a mandatory document required by the APML to ensure supply support actions are planned and accomplished for the applicable program. ILA required item.

**WHEN** – Milestone B and C

**WHERE** – NAVAIR, IPTs, NAVICP, Fleet, Prime Contractor

**HOW** – See instruction provided below for development, content and review and approval for system application

**APML ROLE** – The APML must request the SSMP and monitor its milestones until MSD is achieved.

### POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	ILA	NAVAIR HQ	(301) 757-3085
	Weapon System Manager or Applicable Supply Support LEM	NAVICP	
P 0361.07	Supply Support Management Plan (SSMP)		

### REF –

Supply Support Management Plan (SSMP)      NAVICP 4400.18C

### LINKS –

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

<http://www.navicp.navy.mil/03/036/0362/index.htm>

NAVICP - Life Cycle Management

<http://aicpm16.icpmech.navy.mil/kms/kms.nsf>

NAVICP KMS

NAVICP Knowledge Management System (KMS)



**SUPPLY SUPPORT MANAGEMENT PLAN**

10/23/00

Acquisition Category: ACATID

Acquisition-ID:

Item Name:

System Designator:

Type of Equipment:

SSMP Serial:

Revision:

Dated:

Est.

Items:

Type of Acquisition:

Traditional

Provisioning Type:

MIL-STD-1388

2B

CAGE:

Reference Number:

Contract Number:

NAVICP Logistics Manager:

0318.L

215-697-3433

NAVICP Provisioning Analyst:

03621.14

215-697-3733

APML/Field APML:

NAVAIR

3.1.2E

301-757-5511

<u>MILESTONE</u>	<u>SCHEDULED</u>	<u>ACTUAL</u>
1. PSOW Issued	Jul. 1996	
2. Production Contract Award	Dec 1996	
3. PSOW Funded by Acquisition Sponsor	Dec 1996	
4. PSOW Guidance Conference	Dec 1996	
5. Commence Supportability Analysis	Oct 2002	
6. ISAL Quantities Provided to Operating Sites	Aug 2005	
7. LLTIL Received	Dec 2005	
8. LLTIL Items Established in MIF	Feb 2006	
9. PTD Received (024,036, Master Files, etc.)	Mar 2006	
10. Interim Component Repair Contract Awarded	Apr 2006	
11. ISIL Received	Jun 2006	
12. ISIL Items Established in MIF	Aug 2006	
13. Product Baseline	Aug 2006	
14. LLTIL Placed on Contract	Aug 2006	
15. Supportability Analysis Complete	Aug 2006	
16. Provisioning Preparedness Review	Sep 2006	
17. Designated Repair Point Assigned	Oct 2006	
18. Commence ISP	Dec 2006	
19. ISIL Material Placed on Contract	Jan 2007	
20. ISP Completed	Feb 2007	
21. SSRs/NIMSRs Provided to Other ICPs	Feb 2007	
22. ISP Results Input to MIF/PSI/WSF	Feb 2007	
23. Post Item Selection Buy Placed on Contract	Aug 2007	
24. ISIL Material Delivered	Jan 2008	
25. Initial Operational Capability	Feb 2008	
26. Pre-Transition Conference	Apr 2008	
27. Transition Conference	Jul 2008	
28. LLTIL Material Delivered	Aug 2008	
29. Post Item Selection Buy Material Delivered	Aug 2008	
30. Component Repair Contract Awarded	Aug 2008	
31. Transition Products Provided to TYCOMs	Sep 2008	
32. ISIL Matl. Redistributed from ISS Warehouses	Sep 2008	
33. MSD	Oct 2008	

Figure J-7-1 Sample Supply Support Management Plan

## J-6 - AVCAL/SHORCAL

**WHO** – NAVAIR, APML, NAVICP, TYCOM, Fleet

**WHAT** –

***The Aviation Consolidated Allowance List (AVCAL):***

- Developed and published by NAVICP
- Lists the range and depth of aviation material that is authorized to be stocked by a ship to support maintenance and operations of embarked aircraft.
- Incorporates consumer level requirements that are in agreement with approved maintenance plans and are tailored to each using activity.
- The fixed allowance requirements included within the AVCAL are negotiated with the NAVICP, cognizant TYCOM, and user activity at AVCAL Quality Review Conferences (AQRCs).
- AQRCs ensure propositioning of retail stocks at the operating site to provide adequate material support.

***Shore-Based Consolidated Allowance List (SHORCAL):***

- Ashore activities use in place of the AVCAL.
- Procedurally same as AVCAL
- Ordinarily associated with consumer level support for aviation depot and field level repairable
- Includes both consumable and repairable allowances when initially established for an operating site.
- Subsequent SHORCAL requirements for consumable items must be for new aircraft or a weapons system.

**WHY –**

- Provide optimum ship's effectiveness and aircraft operational readiness in a combat environment.
- OPNAV Instruction 4423.4 series implements policy concerning secondary item stockage and requirements determination, beginning with initial provisioning and continuing through the demand development period, through use of program data that specify the quantity and phasing of the principal (end) items to be delivered. It also establishes policy and responsibility associated with the development of program data used in the computation of initial spares requirements.

**WHEN –** Production & Deployment and Operations & Support Phases. (The AVCAL/SHORCAL schedule is prepared by NAVICP and is maintained on their website. (see links & references))

**WHERE –** NAVICP, TYCOMs, Fleet

**HOW –** The Weapon System Planning Document (WSPD) is a policy and planning document produced by NAVAIR. The WSPD provides the guidance necessary for the acquisition and logistics support of naval aircraft. The WSPD provides the number of aircraft at each site, levels of maintenance capability, pack-up requirements, carrier schedules, rotational aircraft assignments, and approved flying hours.

Initially, listings for required spare items are developed using the provisioning master data file, created using the data delivered from supportability analysis summaries. The actual AVCAL/SHORCAL product is a compilation of that data file run through the Readiness Based Sparing model. Modeling is used to determine range and depth necessary to achieve and sustain the user's required availability performance objectives. Initial AVCAL/SHORCAL listings are based on early usage data and are updated as the system matures to reflect current usage data. Associated terms used in conjunction with the AVCAL/SHORCAL include:

- ***Allowance Change Request-Fixed (ACR-F)***: is the document submitted to NAVICP by the operating site requesting a change in quantity to a fixed allowance. ACR-Fs are submitted on NAVSUP Form 1375.
- ***Allowance Requirements Register (ARR)***: is an allowance document containing potential range and depth of aviation material to support maintenance requirements anticipated during a 90-day period. It is based on estimated reliability factors or failure rates derived from actual system-wide usage.
- ***Beyond Capability of Maintenance (BCM)***: is an action taken by IMAs when repair is not authorized at that level or when an activity is not capable of doing the repair because of a lack of equipment, parts, facilities, technical skills,

technical data, and so forth. Refer to OPNAVINST 4790.2 for a list of BCM codes.

- **Deckload:** total aircraft and equipment types and numbers embarked on a particular ship.
- **Endurance Period:** length of time, expressed in months, a consumer level inventory is required to support an operating site's mission without resupply.
- **Fixed Allowance:** an authorized level of repairable regarded as the maximum level of inventory to be maintained.
- **Maintenance Support Packages (MSPs):** contain consumable, low-cube, nonhazardous maintenance items that are maintained in MSP cabinets. Under the Fleet Aviation Logistics Support Center (FALSC), shipboard aviation stocks are off-loaded to designated naval air stations for inventory management purposes. MSP material is stored in designated cabinets in mockup staging areas. The MSP cabinets will be positioned on the ship at the time of re-AVCAL.
- **Operational Support Inventory (OSI):** is the quantity of prepositioned material required to support the planned aircraft program and maintenance mission of an operating site. The OSI is composed of "fixed allowance" for DLR and FLR as well as "fixed" operating level for consumables.
- **Order and Shipping Time (OST):** is the interval between the time a stock point processes a stock replenishment requisition to a supplier and receipt of an NAVICP (supplier) in-stock item. The OST is currently fixed at 17 days.
- **Supplemental Aviation Spares Support (SASS):** is commonly retimed to as a pack-up kit that is required to support detached aircraft operations. The SASS is composed of DLR and FLR items. Authorized SASS requirements are considered additive to an operating site's fixed allowance.
- **OSI Requirements Determination:** The community approach is used in determining the OSI requirements. This process is used for both repairable and consumable items as described in the following paragraphs.
- **Consumable Items:** In a community approach, consumable requirements are determined by using the Ship's AVCAL Asset Demand Tape (SAVAST) from carriers that are supporting the same aircraft and equipment, including those undergoing re-AVCAL. This method is designed to maximize the range for irregular demand patterns. This method also minimizes the establishment of new items for the purpose of recording its number of demands. The community SAVAST process includes taking data from four recently deployed aircraft carriers and data characteristics off the SAVAST undergoing re-AVCAL and

creating, a combined SAVAST. Items on the SAVAST that have positive Average Monthly Demand (AMD) and are not applicable in NAVICP tiles are included in the preliminary products.

- **Repairable Items:** A new technique has been implemented to determine the repairable fixed allowances for carriers/amphibious ships. Essentially, the collective 3-M experience gained from recently deployed aircraft carriers is used as the basis to determine the baseline fixed allowance. In this manner the usage experience during deployment of all aircraft carriers is considered rather than that of a single carrier. Baseline fixed allowance is considered the standard aircraft carrier allowance and is incorporated into the preliminary AVCAL. Changes to the baseline fixed allowance formulate the basis of negotiations at the AQRC.
- **Initial Outfitting:** The ARR columnar quantity is selected for AVCAL inclusion for weapons systems not previously supported.
- **Applicable Constraints:** The attrition allowance quantities for items with identical ARR application on the previous and current AVCAL and reflect zero usage will be reduced to one. Protected aircraft and weapons systems are not subject to constraints. When requested by the type commander, additional exceptions to the constraint program may be applied.
- **Preliminary Requirement:** Stock levels developed from the mechanized requirements process are used as the point of departure in AVCAL negotiations. The established allowance or revisions during Readiness Improvement Program (RIP) reviews will be included into the preliminary AVCAL and be considered as NAVICP recommended quantities.
- **Readiness Improvement Program (RIP):** During the RIP, specifically selected aircraft/ systems are reviewed to identify logistics problems. As a result of the RIP, some allowances at an operating site may or may not get adjusted. Increases in depth and additions to the range to the ship's allowance are implemented during the re-AVCAL.
- **Preliminary AVCAL Aids:** The Naval Inventory Control Point (NAVICP) forwards the preliminary AVCAL review aids to the applicable ship and cognizant TYCOM 45 days before the scheduled conference date.
- **AVCAL Quality Review Conference (AQRC):** The NAVICP convenes the conference to negotiate the allowance requirement of the operating site. The information in the site's maintenance data collection system is the primary element in negotiations of repairable items. The information includes the number of items processed as BCM, items repaired, and the TAT of repairs. The NAVICP-PMI adjusts the preliminary requirement levels to reflect the negotiated allowance. Authorized changes will be incorporated in the final AVCAL products that are forwarded to the operating site.

**NOTE:**

*The ACR-F is used to request an increase or decrease in allowance after the re-AVCAL.*

- **Miscellaneous Requirements:** Other OSI requirements include the industrial support package (ISP) and the supplemental aviation spares support (SASS).
  - The ISP is designed to provide an 8-month range and depth support for an aircraft carrier's LRCA and is currently incorporated in the community SAVAST.
  - The SASS is supplemental and not additive to the operating site's AVCAL quantity. These requirements are based on several factors, as follows:
    - The level of repair
    - The number and type(s) of aircraft to be supported
    - The flying hours expected over an endurance period
    - Predicted removals

**APML ROLE –**

- Within the IPT process, ensure the supply support management plan (SSMP) identifies the AVCAL/SHORCAL provisioning requirements initially (prior to MSD).
- Ensure supply support data requirements are identified, procured and delivered to allow timely provisioning and delivery of all spares requirements.
- Continuous interface with the WSM lead and supply support team throughout the identification, procurement, delivery and repair of spares is imperative to ensure team coordination of the acquisition requirements process and user needs are achieved.

**POC** – NAVICP WSM, Supply Support LEM

**REF –**

NAVICP INSTRUCTION 4441.173C, I-COSAL

NAVICPINST 4105.4, ISS

SPCC INSTRUCTION 4440.459 Policy And Procedures For Management Of Ship OSI  
(OPERATIONAL SUPPORT INVENTORY )

**LINKS –**

<http://www.navicp.navy.mil/03/034/avcalshorcal.htm>

AVCAL/SHORCAL schedule

<http://www.navicp.navy.mil/acr/index.htm>

Allowance Change Request (ACR) Submission Form

<http://www.navicp.navy.mil/fleetlogistics/aviation.htm>

NAVICP home page – Integrated Logistics Support

<http://www.navicp.navy.mil/>

NAVSUP home page – Naval Inventory Control Point

<http://www.navsup.navy.mil/>

NAVSUP Website

<http://aicpm16.icpmech.navy.mil/kms/kms.nsf>

NAVICP KMS System

# **APPENDIX K**

## **COMPUTER RESOURCES SUPPORT**

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## K-1 - COMPUTER RESOURCES

**WHO** – APML, APMSE (Avionic System Project Officer (ASPO)), FST, SSA, Fleet, Prime Contractor

**WHAT** – The facilities, hardware, system software, software development and support tools, documentation, and personnel needed to operate and support embedded computer systems.

- Embedded computers are defined as digital computers or processors (e.g., microcomputer, microprocessor), that are integral components of tactical end items from a design, procurement, and operations point of view.

**WHY** – SECNAVINST 5200.32A requires a review of the adequacy of planned life-cycle management, reporting, and control procedures preceding a Milestone II decision.

**WHEN** – Throughout the life cycle

**WHERE**- NAVAIR, IPT, FST, SSA, Fleet, Prime Contractor

**HOW** –

***Section 5 of the Operational Requirements Document:***

- Identifies CRS constraints for ACAT I and ACAT IA programs (examples include language, computer, database, architecture, or interoperability constraints).
- Describes the capabilities desired for computer resources support.
- Identifies any unique user interface requirements, documentation needs, and special software certifications.
- For ACAT II, III, and IV programs, CRS constraints or information are included in the Acquisition Plan or Acquisition Strategy Report.

### ***Issues and Management Procedures***

***SECNAVINST 5200.32A:***

- Requires an adequacy review of the adequacy of planned life-cycle management, reporting, and control procedures preceding a Milestone II decision. This review includes:
  - Risk analysis
  - Life-cycle cost analyses
  - Hardware/software integration plans
  - Interface controls
  - Configuration management plans

- Security features
- Maintenance and logistic support plans
- Manpower and training plans
- Test and evaluation plans
- Transition plans
- Software development plans
- Sub-contractor SW development plans
- Adequacy of programmed manpower and training resources, in view of the planned logistic support, is also assessed.

***Computer Resources Life Cycle Management Plan (CRLCMP):***

- Describes the program structure and establishes tasks, responsibilities, necessary interfaces between activities, and configuration control requirements which will be implemented during software development and test as well as the Production and Deployment and Operations and Support phases of the weapon system. The CRLCMP is a living document and will be periodically updated.
- Plans prepared in preparation for the System Development and Demonstration phase, Production and Deployment and the Operations and Support phases include:
  - The Software Development Plan (SDP)
  - Sub-contractor SDPs
  - System Configuration Management Plan (CMP)
  - System Software Configuration Management Plan (SCMP)
  - Software Quality Assurance Plan (SQAP)
  - Computer Program Test Plan (CTP)

***Software Configuration Items (CIs):***

The major software configuration items to be considered during the System Development and Demonstration are:

- Simulation Support Software
- Applications System Software
- Display Electronics Unit (DEU) software
- Vibration, Structural Life, and Engine Diagnostics (VSLED) software
- Digital Flight Control Computer (FCC) software
- Aircraft Maintenance Data Processing
- Control Display Unit/Engine Instrument Crew Alerting System (CDU/EICAS)
- Flight Incident Recorder (FIR)
- Multi-Mode Radar (MMR)
- Forward Looking Infrared (FLIR)
- Digital Map System (DMS)
- Radar Warning Receiver (RWR)
- Missile Warning
- Laser Detection
- Countermeasures Dispensing

- Interface Units (Avionics Bay Interface Unit, Wing Interface Units, Nacelle Interface Units)
- Multi-mission Advanced Tactical Terminal (MATT)
- Suite of Integrated Radio Frequency Countermeasures (SIRFC)
- Visual Dynamic Display Simulation (VDDS)

***Support Organization:***

- The weapon system prime contractor normally prepares a SDP which describes in detail the contractor's plan for software design, development, coding, testing and management of the effort.
- Configuration control of the software is covered in the overall weapon system CMP, the SCMP and the SDPs prepared by the contractor and the sub-contractors.

***Software Development Strategy***

Achievement of the stated requirements and objectives will normally be accomplished in three phases.

***Phase I******The Development Phase:***

- Software developed in accordance with DoD-STD-1679A or DoD-STD-2167A, as appropriate.
- Government procurement of the documents listed below and review of those documents by the government activities, along with the overall SVT process, are essential to ensure that the developed software meets the operational requirements and satisfies the software support requirements and objectives.
- The purpose of each document, the information that must be included and the required format are discussed in DoD-STD-1679A or DoD-STD-2167A.

***SD&D Software may include:***

- SDP (updated)
- Software Quality Program Plan (SQPP)
- Configuration Management Plan (CMP)
- Software Configuration Management Plan (SCMP)
- All Interface Control Documents (ICDs)
- All Program Performance Specifications (PPSs)
- JASS/JSSS Computer Program Test Plan (CPTP)
- JASS/JSSS Computer Test Specifications (CPTSs)
- Data Base Design Documents (DBDDs)
- Computer Program Test Procedures (CPTPs)
- Program Design Specifications (PDSs)
- Software Design Documents (SDDs)

- Software Requirements Specifications (SRSs)
- Operator Manuals (OMs)
- System Segment Specifications (SSSs)
- System Operator's Manuals (SOMs)
- Support Software Program Packages (SSPPs)
- Computer Resources Integrated Support Documents (CRISDs).
- Software Test Documents (STDs)
- Interface Requirement Specification

**Production:** Early in the production phase of the program, finalized versions of the software documentation listed in the previous sections will be made available to the government. This will provide all the documentation necessary to enable the government to maintain and update the weapon system product baseline.

**Performance Monitoring:** During these phases, the government, through document review and approval, analysis of metrics and design reviews, to ensure that software development requirements and objectives are being met, will monitor the contractor's performance. Progress is monitored through in-process design reviews, working group meetings, Technical Interchange Meetings (TIMs) and IPT meetings held during the course of the development.

## **Phase II**

### **Transition phase:**

- Begins following contractor systems integration and test
- Continues through the formal government testing period (during a specified interim support period after IOC).
- Contractor supports formal weapon system testing activities
- The government SSA personnel along with other service representatives will be involved in monitoring tests as well as preparing for government support. This preparation will consist of:
  - Continued participation in design reviews and analysis
  - Refining and implementing SSA requirements
  - Completing transition planning
- The SSA will be structured to enable expansion to support software support/configuration control requirements, if a multi-service support requirement is established.
- The SSA will be a government-lead integrated product team (IPT), consisting of government, prime contractor, support contractor participants, and supplier as needed.

***Test & Evaluation (T&E):***

- Purpose is to initially verify performance and compliance with specifications, suitability and effectiveness relative to identified configuration items, sub-systems, and the overall integrated system and the associated software
- Assess the system operational capability to meet all effectiveness and suitability mission requirements
- Milestones for formal software testing will be contained in an EMD CRLCMP. These efforts will include:
  - Laboratory and flight testing
  - Evaluation of the developed software through contractor demonstration tests
  - A formal weapon system evaluation program
- T&E will encompass all systems, subsystems, equipments and software.
- Both the technical and operational performance of the software will be tested during Phase II
- SSA representatives to ensure that they are updated and reflect the current configuration of hardware and software, will closely monitor all data and documentation during T&E.

***Configuration Management (CM):***

- Contractor developed software is expected to undergo changes to correct any deficiencies noted during T&E efforts
- Contractor CM of software changes, which began during the development phase, will be critical during this phase
- Government configuration control boards will be chartered to monitor the change activity of the developed software
- These boards will include government representatives to ensure adequate monitoring/review of changes that may affect software configurations
- The SSA will assume full configuration control for the software at the SSD. The milestones for assuming this control and the procedures established and implemented to ensure necessary configuration control by the SSA will be identified in the CRLCMP, weapon system SCMP and weapon system CMP.

***Fleet Introduction:***

- Phase II terminates with weapon system fleet introduction
- Phase III begins and continues throughout the system life cycle.

**Phase III****Support Phase:**

- Support will commence with the SSA assumption of responsibility for the weapon system software at SSD and will continue throughout the system life cycle
- Management, procedures, major activity interfaces of the government support process will be detailed in the EMD CRLCMP, weapon system SCMP and weapon system CMP.

**Depot Support:**

- Provides an efficient and effective mechanism for the modification, maintenance and configuration control of the software related to the overall aircraft, including flight controls, avionics, weapons, SE, IETMs and trainers.
- The System Software Support Activity (SSSA) will be responsible for managing software updates and associated documentation in the deployment phase
- At SSD, the government will assume responsibility and control for support of each officially designated Configuration Item (CI).
- The software CIs Government personnel, will be the lead and the point-of-contact for the SSA
- The Software Change Review Board will consist of various member of the IPT
- The changes in software will be contracted to the various vendors that are affected by a given software change
- The Software Support Team will distribute the tapes to the fleet.

**Support for Software/Firmware CIs:**

- The following software CIs are strong candidates for support by the weapon system Avionics SSA:
  - WEAPON SYSTEM (JVX) Simulation Support Software (JSSS)
  - WEAPON SYSTEM (JVX) Applications System Software (JASS)
  - Display Electronics Unit (DEU) Software
  - Vibration, Structural Life, and Engine Diagnostics (VSLED) Software Package
  - WEAPON SYSTEM Maintenance Data Processing System (MDPS)
  - WEAPON SYSTEM Mission Planning System (VMPS)
  - Control Display Unit/Engine Instrument Crew Alerting System (CDU/EICAS)
  - Digital Flight Control Computer System (FCC) software
  - Interface Units (Avionics Bay, Wing, Nacelle).

***Automated Maintenance Environment (AME):***

- As a portion of Computer Resource responsibilities, the APML is responsible for the utilization and implementation of AME
- Today's Naval Aviation maintenance environment is characterized by many "stovepipe" information systems (IS) and application programs
- These multiple systems use different data sources, make learning and mastery of maintenance/logistics processes more difficult, and consume more scarce support resources than an integrated system would
- Proposed improvements to the current complex environment must be justified by sound business cases and must integrate with the Navy's existing investments in technical data, tools, information technology (IT) infrastructure and business processes

***Automated Maintenance Environment (AME) is:***

- A systems development and integration initiative
- Sponsored by the Office of the Chief of Naval Operations and the Naval Air Systems Command, to create an integrated, less costly maintenance and logistics support system for Naval Aviation
- Taking advantage of the advanced information technologies available in the areas of aircraft onboard diagnostics, Automatic Identification Data Collection (AIDC), personal computer (PC) networks, relational databases and data communications, enabling the reengineering and streamlining of Naval Aviation aircraft maintenance and logistics processes
- Providing the information required by the operational, support, acquisition, and in-service engineering communities to configure, maintain, track and provision for aviation assets
- Supporting the goals and makes use of infrastructure investments being made under IT21
- Building upon the existing Navy Tactical Command Support System (NTCSS) and Naval Aviation Logistics Command Management Information System (NALCOMIS) infrastructure
- Leveraging this significant investment in Naval Aviation infrastructure by integrating new and emerging technology (onboard diagnostics and prognostics, AIDC, portable electronic display devices, and interactive electronic technical manuals)

- Currently scheduled to begin following software prototype testing in 1<sup>st</sup> quarter FY99, and is expected to be complete by the end of FY05. However, initiatives to accelerate AME implementation are being investigated.

**AME Description/ Benefits:** For additional AME information, see Tab K-3.

## **APML ROLE –**

- Identify within the IPT process inherent system design CRS requirements
- Ensure CRS requirements are considered and identified early in the system supportability planning to ensure maintainer interests are addressed throughout the life of the system
- Ensure identified CRS is planned, budgeted and resourced to meet user expectations for operational performance objectives
- Sustain CRS requirements

## **POCs –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-4.1	APMSE	NAVAIR HQ	
AIR-4.5	ASPO	NAVAIR HQ	
AIR-3.6	ILS Systems/Analysis	NAVAIR HQ	

## **REF –**

SECNAVINST 5200.32A

DEPSECDEF Memo dtd 30 October 2000

## **LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6.1/CFSG1.doc>

Logistics Tool Box

[www.dau.mil](http://www.dau.mil)

Defense Acquisition University Web Site

<https://www.nalda.navy.mil/3.6.1/alsp0602.doc>

Logistics Tool Box



## K-2 - COMPUTER RESOURCES LIFE CYCLE MANAGEMENT PLAN (CRLCMP)

**WHO** – NAVAIR, APML, APMSE (ASPO), IPTs

**WHAT** – The CRLCMP is the primary product of the Computer Resources Working Group (CRWG). The approved document defines and proclaims the entire spectrum of computer resources for the system for the intended life cycle. The CRLCMP includes:

- Software support concept
- Selection of software source of support
- Describes the software support concept well enough to enable contractors to provide meaningful trade-off analyses
- In their Logistics Support Analysis (LSA) efforts and meaningful depot support requirement suggestions in their Support Equipment Recommendation Data (SERD) efforts.

**WHY** – The primary planning document for computer resources throughout the system life cycle

- System program plan for computer resource and software requirements, development acquisition and life cycle support including any changes in the system, or its support environment.
- Source of justification in obtaining the resources required to establish the Post-Deployment Software Support (PDSS) capability and to help derive the support requirements by all participating agencies.
- Key Acquisition Strategy source for all software/software support planning for the program office.
- Defines life cycle system strategy for the software support concept, selection of source of software support, hardware design impacts, and other software support decisions and solutions.

**WHEN** – Milestone B, updated before Milestone C and throughout the system life cycle

**WHERE** – NAVAIR, IPT, FST, SSA, Fleet, Prime Contractor

**HOW** – While there are no longer formal requirements for the CRLCMP, a similar document is needed to address life cycle software support issues for all computer systems and software elements. A format for a Computer Resources Plan is provided in Desk book (see references and links) that can be used and tailored to meet the needs for any software-intensive system.

## APML ROLE –

- Ensure through the IPT process all CRS requirements are identified in the CRLCMP or plan as applicable
- Ensure ALSP identifies all supportability requirements including planning, funding and resources necessary maintain and sustain support throughout life of system
- Ensure planning includes hardware, software, user instructions and tech support.
- Integrate requirements as required into the AME environment planning for the system and user plan.
- Sustain the support system requirements

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E	ILA Team	NAVAIR HQ	(301) 757-3085/3083
AIR-4.5		NAVAIR HQ	

**REF** – DoD 5000.2-R(to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), ALSP Guide, NAVAIR Contracting For Supportability Guide

## LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://web1.deskbook.osd.mil/default.asp>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System

<https://www.nalda.navy.mil/3.6.1/alsp.html>

Logistics Tool Box

[http://classic.deskbook.osd.mil/htmlfiles/rlframe/REFLIB\\_Frame.asp](http://classic.deskbook.osd.mil/htmlfiles/rlframe/REFLIB_Frame.asp)

Defense Acquisition Desk book (DON Section), enclosure (7), appendix XI, format for computer resources planning

<http://cosip.npt.nuwc.navy.mil/crib/>

Expert System with a database of Computer Hardware and Software products, with an emphasis on the information required by U.S. DoD application, in particular that of the U.S. Navy.

[www.sei.cmu.edu/pub/documents/87.reports/ps/tr02.87.ps](http://www.sei.cmu.edu/pub/documents/87.reports/ps/tr02.87.ps)

This AFMC Computer Resources Support document provides additional information useful to the APML.

## K-3 - AUTOMATED MAINTENANCE ENVIRONMENT (AME)

**WHO** – NAVAIR, APML, APMSE, FST, SSA, Prime Contractor

**WHAT** –

- Automated Maintenance Environment (AME) is part of an overall automated information systems vision for Naval Aviation
- It is not a separate acquisition program
- It describes a conceptual future state for Naval Aviation maintenance and logistics information systems
- Sponsored jointly by the Office of Chief of Naval Operations (N88), and Naval Air Systems Command (AIR 3.0).

**WHY** –

- To evolve current information systems and business processes into an integrated, streamlined, efficient and affordable maintenance and logistics support system for Naval Aviation
- Successful implementation of the AME will accelerate improvements in computer hardware, software and networks, and maintenance and logistics policies and processes. These improvements are necessary to:
  - Re-engineer Naval Aviation maintenance and logistics business practices to drive down support costs
  - Realize the budgeted cost savings potential of advanced aircraft diagnostics systems currently being developed and fielded
  - Fix Year 2000 problems, and
  - Avoid the fielding of new sub-optimal stovepipe solutions

***The Benefits of the AME***

- ***Lowering lifecycle/total ownership costs:***
  - Through reductions in manpower at the squadron level
  - Reducing maintenance actions as a result of better configuration management and component history information
  - Cost savings achievable through AME implementation are detailed in the AMIDD Cost-Benefit Analysis performed by NSWC Carderock
- ***Enabling the re-engineering and simplification of maintenance and administrative processes:***
  - Electronic "drag and drop" aircraft transfers
  - Eliminating paperwork and unnecessary steps
  - Maintenance and personnel scheduling
  - Work order generation, inventories

- ***Automating tasks and improving access to information:***
  - Logs and records
  - Near real time access to integrated data for analysis
  - Electronic technical publications
  - Note: Workload reductions may be offset by the increased need for personnel to perform setup, routine management and troubleshooting of PCs, databases and networks.
- ***Making maintenance easier and improving productivity:***
  - Improved prognostics and diagnostics will reduce aircraft fault isolation and repair time
  - PEDDs and IETMs can bring all needed repair information to the side of the aircraft
  - Configuration management and AIDC will eliminate wrong part ordering and greatly simplify logs and records activities
  - Drop down menus, one time entry of data into maintenance/logistics information systems
  - Better built-in data validation will greatly simplify maintenance documentation
- ***Rapidly providing accurate information to all levels of logistics decision makers through a common operating environment will improve:***
  - Spares forecasting processes
  - Material management processes
  - Condition-based maintenance (CBM)
  - Help enable the Integrated Maintenance Concept (IMC).
- Automatically distributing and updating technical data, lowering costs and increasing the frequency of updates.
- Enabling better service life management of aircraft structures, engines and avionics, through more accurate usage data.
- Reducing infrastructure footprint and associated costs, by reducing the number of standalone, single-purpose information and support systems.
- Improving safety. Advanced diagnostic and health and usage monitoring systems have shown the potential to reduce mishaps, as well as operating costs.
- Providing a modular logistics information systems architecture to accommodate future requirements and capabilities.

**WHEN** – AME considerations should be identified early in the system design and supportability analysis planning and throughout the system life cycle

**WHERE** – NAVAIR, IPT, FST, Fleet, Prime Contractor

**HOW –**

***AME Steering Group:***

- Responsibility for maintaining an AME "roadmap" and coordinating and staffing AME related issues
- Chaired by OPNAV N881 and has additional voting members representing NAVAIR 3.6, COMNAVAIRPAC, COMNAVAIRLANT, COMNAVAIRRESFOR and Headquarters Marine Corps.

***Advisory Steering Group:***

- NAVICP, SPAWAR PMW-151, CNATRA ACC, NAVAIR ACC and other commands, as required

***AME Will:***

- Take advantage of the advanced information technologies available in the areas of aircraft onboard diagnostics, Automatic Identification Data Collection (AIDC), Personal Computer (PC) networks, relational/object-oriented databases and data communications, enabling the re-engineering and streamlining of Naval Aviation aircraft maintenance and logistics processes.
- Better provide the information required by the operational, support, acquisition, and in-service engineering communities.
- Fully support the goals of Joint Vision 2010 in the area of Focused Logistics.
- Fully support the goals and make use of infrastructure investments being made under the Navy's Information Technology for the 21<sup>st</sup> Century (IT21) Plan.

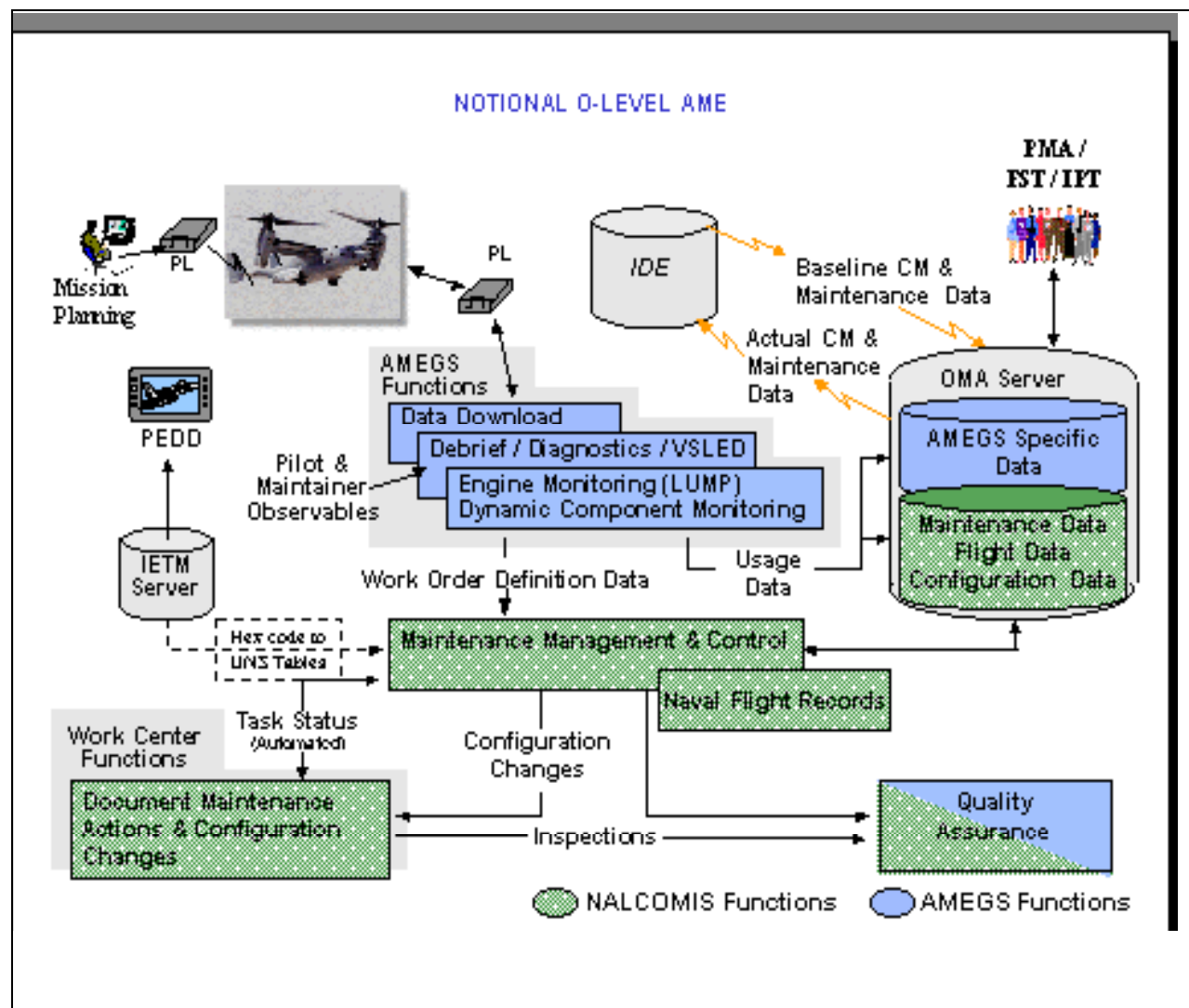
***AME will accomplish this by:***

- Integrating the advanced aircraft diagnostic capabilities being built into current and future aircraft with Naval Aviation's current and future maintenance and logistics tools and processes, particularly NALCOMIS and the NALDA Integrated Data Environment (IDE).
- Reducing the size and cost of the logistics "footprint" that must be deployed to support Naval aircraft, by using digital information instead of paper, and eliminating separate, single purpose computer systems.
- Providing an integration path for computer based training and electronic training jackets, Interactive Electronic Technical Manuals (IETMs), Portable Electronic Display Devices (PEDDs) and Automatic Identification Data Collection (AIDC) into NTCSS/NALCOMIS and the NALDA IDE.

- Complying with IT21 networks and standards. Ensuring an efficient capability to support detached or remote operations in areas where full connectivity cannot be achieved.

### **APML ROLE –**

- Ensure consideration is given early in the design phase to inherent diagnostics and prognostics technologies aimed at reducing the maintenance burden and life cycle cost of the system
- Engage the IPTs to investigate opportunities throughout the life of the system aimed at embracing system enhancements especially for evolutionary planning
- Ensure inherent technologies are supportable and maintainer expectations are achieved through continuous interface and consideration for user needs
- Ensure supportability requirements are adequate, accurate and timely while addressing all integration and interface requirements necessary for total AME implementation
- Develop, maintain and defend the requirements budget and funding necessary to sustain system AME program



**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.6	ILS Systems/Analysis	NAVAIR HQ	
	AME Team Lead		(301) 757-8782
	NALCOMIS Functional Mgr		(301) 757-8909
	Fleet Design		(301) 757-8857
	AME Team Member		(301) 757-8787
	AME Team Member		(301) 757-3092
	Mid Tier Mgr/IDE Interface		(301) 757-8889
	AIT Liaison		(301) 757-8782
	PEDD Liaison		(301) 757-3092
	Baseline Functional Mgr		(301) 757-8782

**REF –** DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), ALSP, Acquisition Logistics Guide

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil/3.6.2/ame/>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.2/ame/docs.html>

Logistics Tool Box

<http://web1.deskbook.osd.mil/default.asp?>

Acquisition Technology & Logistics (AT&L) Knowledge Sharing System



## K-4 - NALCOMIS OOMA

**WHO** – NAVAIR, APML, IPTs, FST, TYCOM, Fleet

### **WHAT** –

**Legacy NALCOMIS:** An automated Management Information System (MIS) that provides aviation maintenance and material management with timely, accurate and complete information on which to base daily maintenance decisions.

- It has an automated data entry device that simplifies and improves data collection and is housed in a single, integrated, real-time automated system that supports workers, supervisors and managers.
- NAMP must be satisfied. Legacy NALCOMIS has interfaces with other major Integrated Logistics Support (ILS) systems in the Naval aviation logistics community. Legacy NALCOMIS is limited however in the breadth of data it supports.

**NALCOMIS OOMA:** Provides a basis toward achieving a completely Automated Maintenance Environment (AME), which streamlines the entire maintenance process, by providing the ability for the automation of data entry from aircraft flight recorders Memory Unit (MU) and the automatic accumulation and tracking of usage.

- The OOMA requirement is to create a system by which individual platforms may independently develop application modules:
  - Pilot and Maintenance Debrief
  - On-line diagnostics
  - Structural life prognostics
  - Interactive Electronic Technical Manuals (IETM)
  - Use of Portable Electronic Display Devices (PEDD), that operate in the NALCOMIS infrastructure and interface with the core functions of OOMA

### **Functional Capabilities:**

- *Reports* maintenance transactions in near real-time
- *Tracks* actual equipment configuration data
- *Locates* parts and material through connectivity with Supply Department via NALCOMIS IMA
- *Allows instant access* to unit readiness information by authorized users of the top tier of replication
- *Maintains* electronic logbooks (Log books may be e-mailed)
- *Includes standard interfaces* for aircraft-specific diagnostic programs (Super Hornet, Osprey, JSF)
- *Improves data accuracy*
- *Reduces* “stovepipe” data systems

***Future enhancements:***

- Will transfer data to the Intermediate Maintenance Activity (IMA)
- From IMA to the Consolidated Automated Support System (CASS) Automated Test Environment (ATE) stations
- Work orders/Maintenance and Material Management (3M) data
- Re-directed Test Program Set (TPS) results in an effort to further streamline the maintenance process.

***OOMA Interfaces:***

- Various platform specific software application modules that address specific maintenance functions.
- Capable of supporting multiple aircraft platforms modules by providing generic inputs and outputs to and from Core NALCOMIS to these modules. Data transfers/downloads to/from upline systems such as the Integrated Weapons System Data Base (IWSDB), and archive agencies and though requiring each aircraft platform to conform to a different format, will be transparent to the user.
- Core Module will be the process controller for the system by starting/stopping each of the application modules and controlling hardware devices (such as printers, modems, etc.).

**WHY** – OOMA provides day-to-day maintenance management tool for aviation squadrons and other organizational-level maintenance activities.

***Need To Know:***

- What assets we have
- What condition they are in
- Where they are located

***Budget Defense:***

- Have to show when and where help is needed

***Control:***

- Configuration of the systems must be stable

**WHEN** – Milestone B initially, Milestone C, O&S and throughout the system life cycle

**WHERE** – NAVAIR, FST, Fleet

**HOW –**

- There are numerous significant business process changes and improvements associated with implementation of Optimized NALCOMIS OOMA.
- Viewed as a completely new system with new functionality.
- Designed to minimize the impact of this massive business process improvement effort by identifying changes expected between Optimized NALCOMIS OOMA and the Legacy NALCOMIS OOMA system previously used.
- Provide significant improvements in the areas of automated logbooks, configuration management, and automated forecasting and tracking of maintenance schedules.
- Provide provisions for Interactive Electronic Technical Manuals and Portable Electronic Display Devices.
- Data replication capability will enable near real time data visibility and should eliminate most data reporting requirements.

**Core NALCOMIS**

- An on-line MIS which supports the aircraft maintenance and material management requirements aboard aircraft carriers, amphibious aviation helicopter assault ships, Marine Aviation Logistics Squadrons, and Naval/Marine Corps Air Stations. In general
- Manages scheduled and unscheduled aviation maintenance
- Manages data collection for aviation maintenance and material management (AV-3M).
- Performs the following functions at the Organizational level of maintenance:
  - Configuration Management
  - Flight/ Maintenance administration
  - Generic Debrief
  - Ad Hoc Query

**APML ROLE** – Baseline data must be provided for the following categories of equipment relative to each aircraft platform (including support equipment) to be implemented with Optimized NALCOMIS OOMA:

- All Life Limited Components (items require an AESR, ASR, MSR, SRC OR EHR)
- Explosive Devices (AEPS, CADS, etc.)
- Components/parts that require Technical Directive tracking at the part number level avionics (i.e. "black boxes" have avionics changes that are tracked at the component level)
- All items currently tracked in ECAMS/PLTS/COMTRACK
- Components required to support the SAFE program (strain gauges, etc.)
- All repairables contained on the TYCOM joint ICRL for a specific TMS.

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.6	Team Lead	NAVAIR HQ	(301) 757-8482
AIR-3.6	Functional Mgr	NAVAIR HQ	(301) 757-8909
AIR-3.6	Baseline Coordinator	NAVAIR HQ	(301) 757-1066
			(301) 757-8813

**REF –**

Naval Aviation Maintenance Program (NAMP) OPNAVINST 4790.2 Series

**LINKS –**

[https://www.nalda.navy.mil/ooma/Documents/Optimi\\_2.doc](https://www.nalda.navy.mil/ooma/Documents/Optimi_2.doc)

Logistics Tool Box

<https://www.nalda.navy.mil/ooma/home.cfm?sel=home>

Logistics Tool Box

# APPENDIX L

## FACILITIES

### Table of Contents

L-1 – FACILITIES

L-2 – SHIP INTEGRATION

## L-1 - FACILITIES

**WHO** – APML, NAVAIR: PAX: 8.0, 3.1G, NAVAIR: Lakehurst (Shipboard Installation LM), BFM, Fleet

**WHAT** – Determination of the permanent, semi-permanent, or temporary real property assets required to operate and support the system

***Hardware maintenance facilities:***

- Can be generally broken down into organizational, intermediate, depot-level, or other special levels (such as four or five levels of maintenance), and include;
  - Buildings
  - Special power
  - Clean rooms
  - Anechoic chambers
  - Shielded cages
  - Space for support and test equipment
  - Offices

***Software facilities:***

- Can be generally thought of in terms of organizational and depot-level maintenance facilities (programming support centers), and include;
  - Buildings
  - Special power
  - Special equipment cooling
  - Equipment spaces
  - Tape library
  - Offices
- The locations of hardware and software maintenance facilities bear careful consideration in terms of cost, responsiveness, efficiency, and other factors.
- Co-location of both facilities may result in better efficiency and responsiveness but must be balanced with the economies inherent in depot inter-servicing.
- Existing facilities or existing facility modifications must, likewise, be carefully evaluated before decision to construct new facilities.
- The equipment required to develop and produce hardware (such as an assembly line) has tended, in the past, to be different from the equipment required to maintain hardware.
- Items required to develop and produce software are usually identical to the tools required to maintain software.

- The following components comprise the programming support center:
  - Software development laboratory
  - Hardware integration laboratory
  - Test system (for final checkout).

## WHY –

- Inadequate, improper and uncoordinated facility requirements in support of the system can disrupt system activation schedules, training schedules to support system IOC, operational availability, and require costly unplanned /unfunded changes or modifications.
- Acquisition logistics efforts should strive to minimize or eliminate the facilities required to operate and support the defense system.
- When facilities are demonstrated to be absolutely needed, maximizing the use of existing facilities should be considered.

## WHEN –

- System Concept, consideration is given to the potential scope of infrastructure including facility requirements for an alternative to satisfy a mission need
- System Development and Demonstration, Site surveys and MILCON requirements are initiated
- Re-visited throughout the system life cycle as system changes dictate additional and or modification of facilities

## WHERE – NAVAIR: PAX, NAVAIR: Lakehurst, Fleet sites

## HOW –

- ***Facilities Requirements Document (FRD);***
  - The facilities analysis includes; (for the system program being acquired)
    - Conducting studies to define necessary facilities or facility improvements
    - Determining locations, space, utilities, environmental, real estate, and equipment needs.
  - Site Survey;
    - Conducted by a site survey team usually made up of PM personnel, facility engineers, system developer, user command led by the facilities LEM
    - Conducted at the location(s) affected by the system acquisition
  - Site survey evaluation report;
    - Prepared to document the results of the site survey conducted and serves as the basis for preparation of the facility project documentation

- **Project Management Plan;**
  - DD Form 1391, MILCON Justification
  - DD Form 1391C, Military Construction Project Data Sheet
  - Service unique cost estimate document
- **Funding;**
  - Military Construction (MILCON)
    - 5 years for obligation (plus 5 years for expenditure)
    - Appropriation USN 1205
    - No dollar limitations
    - Congressionally approved by line item
    - Approved for a specific location
    - Funds must be spent on specific project in the specified year approved for that project
    - PM has no management or obligation authority over MILCON funds
  - **Alternative Funding;**
    - Exigent Minor Construction
      - Requires congressional notification
      - \$1.5M ceiling (must be completed within 1.5M amount)
      - Can't wait for normal cycle
    - O&MN Minor Construction
      - Maintenance, repair and minor construction
      - \$750K per project limit
      - Must be completed within limit
    - Repair and Maintenance Funds
      - Restore an existing facility (for its original purpose)
    - Emergency MILCON
      - Caused by act of god or national defense
      - Approved by service HQ
      - Must give up existing project funds to fund emergency
      - Funding for Test
      - Program funds are used (usually R&D)
      - Prototype of new facility
      - Must be temporary
      - Consumed in a test
      - Always check with policy folks



## APML ROLE –

- Identify /Interface with the Facilities LEM for system program requirements and planning
- Ensure facility requirements are budgeted and funded to meet system program schedules
- Include all facility planning and requirements in the system ALSP
- Ensure all facility requirements are included in periodic reviews to ensure facilities stay concurrent with system introduction

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-8.0	Facilities	NAVAIR HQ	
	Lakehurst Shipboard Facilities	NAVAIR: Lakehurst	
AIR-3.1G	Shipboard Interface	NAVAIR HQ	

## REF –

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

ALSP Guide

Acquisition Logistics Handbook MIL-HDBK-502

NAVFAC P-72 DON Facility Category Codes

NAVFAC P-80 Facilities Planning Criteria for Navy and Marine Corps

Facilities Requirements Document (for the system program)

## LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.navfac.navy.mil/>

Naval Facilities Engineering Command home page

<http://www.ccb.org/>

Construction Criteria Base (CCB) home page – Unified Facilities Guide Specifications (UFGS)

<http://www.navfac.navy.mil/instr/default.cfm?type=2>

Naval Facilities Engineering Command – NAVFAC Instructions

## L-2 - SHIP INTEGRATION

**WHO** – APML, NAVAIR: PAX: 3.1G, NAVAIR: Lakehurst: Shipboard Installation LM

**WHAT** –

- Aviation Ship Integration (AIR 3.1G) provides Aviation Logistics Support Review for integrating aircraft and weapons systems into aviation capable ships.
- Coordinates with Aircraft and Ship Acquisition/In-service program managers, contractors, and government agencies ensuring seamless integration and mission support over the Platform Acquisition Life Cycle.
- Conduct shipboard weapons integration and improve the process for safe and effective introduction of a new or modified weapon system to the Fleet.

**WHY** – \$\$\$!

- For new ship construction, lead times are often 5-10 years ahead of actual deployment.
- Ships already in the Fleet have availability schedules planned normally 5 years in advance.
- Planning for ship alterations should start immediately to maximize the number of ships available and ready to deploy your aircraft or system.
- Each ship your system deploys on will most likely require similar modifications to the entire ship class. This may take 10 years or more to accomplish.
- The best (least expensive) time to incorporate your requirement into the ship is during the design and development phase.
- Anytime after that it will normally require much more funding to incorporate the new system.
- There are significant costs to change drawings/blueprints of ships even before they are actually built.
- The cost increases exponentially during the build process and retrofit process.

**WHEN –**

- Ship Integration for systems and subsystems must be considered “upfront and early” in the design process.
- Development and fielding of naval systems must consider the operating environment as a function of design.
- In most cases, involving ship designers and logisticians in the Concept and Technology Development Phase is ideal.

**WHERE –** NAVAIR: PAX: 8.0, NAVAIR: Lakehurst: 3.1G, NAVAIR: PT Mugu: PMA251D7/314000E

**HOW –*****Aviation Ship Integration efforts consist of the following:***

- *Maintenance Capabilities* – The objective of this focus area is to identify opportunities for increasing overall mission effectiveness through utilization of all Battle Group/Amphibious Readiness Group capabilities. Also, existing and future support requirements and their effect on ship and aircraft platforms must be identified.
- *Integration Timelines* – The objective of this focus area is to coordinate aircraft and ship timelines to ensure aircraft support requirements are incorporated early into the ship’s design schedule.
- *Sortie Generation Rate (SGR) Impacts* – Most ship classes have target sortie generation rates. Sortie generation rates are normally Key Performance Parameters (KPPs) and serve as one measure of the ship’s warfighting capability. When considering support options, any alternative that does not enhance the SGR or meet this requirement will not be the optimal solution and will add risk to your program.
- *Cross Platform Commonalities* – The objective of this focus area is to avoid stovepipe systems that are expensive and unsupportable. Limited space and infrastructure mandate that we maximize commonalities across aircraft platforms.
- *Ships Maintenance Support Facilities* – The objective of this focus area is to ensure maintenance facilities are adequate in size, location, and function.
- *Manpower Impacts* – The objective of this focus area is to assess the impact to ship’s workload and consider changes to the Ships Manning Document (SMD).
- *Future Programs* – The objective of this focus area is to identify aircraft product support requirements early in the Concept and Technology Development Phase to avoid expensive redesign of production systems.

- *Site Surveys* - Conduct Site Surveys to determine if adequate facilities are available to safely support the weapons system. These facilities cover spaces for handling, stowage, breakout, assembly, test and programming, and ready service. Requirements for support equipment, aircraft armament equipment, and ancillary equipment are identified. Requirements for electrical power, compressed air, munitions handling equipment, and servicing equipment are identified.
- *Proposed Military Improvement* – If facilities are not adequate aboard any class ship a Proposed Military Improvement (PMI) document is generated. The PMI describes the improved equipment, system, and/or capability to be installed in the ship, its purpose, and its relationship to existing equipment systems. Final approval of the PMI leads to preparation and submittal of a Justification Cost Form (JCF) by NAVSEA to develop a ship alteration.
- *Ship Suitability Tests* – The Ship Suitability Test (SST) is conducted for all air-launched systems and aircraft defense systems introduced into the Fleet for operational shipboard use. The test is accomplished during Technical Evaluation and involves Navy personnel subjecting the system to replenishment, strike-down, stowage, decanning, assembly, servicing and checkout, strike-up, aircraft uploading and downloading, arming, and de-arming.

## **APML ROLE –**

### **Aircraft Major Platform**

Electrical Power Requirement – Is your aircraft compatible with current ship's output supply?

Fueling Pressure/Rate Requirement – Is your aircraft-fueling rate compatible with ship's refueling capability?

Low Pressure/High Pressure Air Requirement– Does the aircraft require LP or HP air for operation or testing?

HAZMAT Requirement – Will hazardous material(s) be required? Will hazardous waste be generated?

Cube/Dimension Requirements – Can the aircraft be jacked in hangar bay? What is the overhead clearance requirement for maintenance on aircraft? Will your aircraft or system fit the ship under every conceivable condition?

Can the aircraft be towed/maneuvered on the flight deck, on and off elevators, in and out of hangar bays with current support equipment?

Engine Start Requirement – Does the aircraft require external power source for engine starts? If yes, what type (air/electric) and what specifications (pressure, volume, voltage requirements etc.)?

Squadron Work Centers - What are the space requirements and preferred locations?

Jet Blast Deflector (JBD) – Do exhaust temperatures exceed JBD maximums?

For Rotary Wing Aircraft - Is the aircraft equipped with shipboard compatible blade-fold mechanisms and rotor brakes?

Are there any anticipated ship alterations required to operate, maintain, or support the aircraft?

What is the overhead clearance requirement for maintenance on aircraft?

Is the design of your aircraft or system compatible with shipboard operation?

Communication Links/LANS – What communication requirements will the aircraft require, both operationally and in support of maintenance and repair actions?

Training Interface – Will the training system integrate with current ships infrastructure?

**System/Subsystem Interoperability**

Electrical Power Requirement – Do systems/subsystems require unique power for operation or maintenance?

HVAC Requirement – Does the system/subsystem require unique HVAC not currently available on ship?

Low Pressure/High Pressure Air Requirement – Does the system/subsystem require LP/HP air for operation or maintenance?

HAZMAT Requirement – Will hazardous material(s) be required? Will hazardous waste be generated?

Cube/Dimension Requirement – Does the system/subsystem fit into the proposed platform. Does it fit through passageways, doors and hatches to and from repair, storage and operational locations?

What is the overhead clearance requirement for maintenance on component?

Manpower (MOS's/NEC's) Requirement – Does your system/subsystem require changes, additions, or deletions to the current ships manpower? To what extent will the system affect ship's workload? What are the training requirements? Formal? OJT?

Are systems/subsystems going to require additional “I” Level support and/or work centers?

PPE Requirement – Does your system/subsystem require peculiar Personal Protective Equipment (PPE)?

Maintenance Requirement – What levels of repair apply to your system/subsystem?

Cross Platform – Is your system/subsystem applicable to any other platform?

Calibration Requirement – Does your system/subsystem require calibration? Does that capability currently exist aboard ship? Does the calibration procedure require special training, materials, equipment or power?

Are there any other anticipated ship alterations required to maintain, operate or support the system/subsystem?

Training Interface – Will the training system integrate with current ship's infrastructure?

### **SWIT role and responsibilities**

Naval Air Weapons Division shall perform the following:

- Participate in design and program reviews specifically concerned with shipboard integration development and requirements.
- Coordinate and conduct Site Surveys to establish shipboard facility requirements for new or modified weapon systems.
- When shipboard facilities are inadequate to support the new or modified weapon system, develop and prepare PMIs.
- Participate in the development and review of the SHIPALT to ensure program requirements are met.
- Review weapons safety requirements, armament support equipment, and container design for new or modified weapon systems.
- Coordinate and conduct the SSTs for new and modified weapons systems. Report on SST results.
- Participate as members in the Weapon System Explosive Safety Review Board (WSESRB).

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1G		NAVAIR HQ	(301) 757-2672/8210/8213
PMA251D7/314000E	Shipboard Weapons Integration Issues	NAVAIR HQ	

**REF –**

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), ALSP Guide, Acquisition Logistics Handbook MIL-HDBK-502

OPNAVINST 8000.16 NOMMP Chapter 1.7

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil>

Logistics Tool Box

[www.navsea.navy.mil](http://www.navsea.navy.mil)

NAVSEA home page

# **APPENDIX M**

## **SUPPORT EQUIPMENT**

### **Table of Contents**

M-1 - SUPPORT EQUIPMENT MANAGEMENT

M-2 - TEST PROGRAM SETS (TPS)



## M-1 - SUPPORT EQUIPMENT MANAGEMENT

**WHO** – NAVAIR: PAX: PM260, NAVAIR: Lakehurst: 3.1/4.8, Prime Contractor

**WHAT** – Management of all equipment (mobile or fixed) required to support the operation and maintenance of the system including:

- Ground handling
- Tools
- Metrology/calibration
- Manual/automatic test
- Test Program Sets (TPS)
- Special Purpose ETE
- Maintenance Assist Modules (MAM)
- Other multi-use support items

**Common Support Equipment (CSE):** General purpose items supplying or measuring broad parameters of physical properties that are known to be established in the using service's inventory;

- Aircraft Handling
- Ground electrical
- Pneumatic units
- Hydraulic power units
- Towing
- Hoisting
- Fueling
- Signal generation devices
- Voltage, Amp and phase measuring devices
- Weapons Control

**Peculiar Support Equipment (PSE):** Designed and developed in conjunction with the development of a specific system and does not meet the criteria of CSE.

**WHY** – Navy Policy requires the number of different tools and support equipment required for test, maintenance, assembly, servicing, handling, etc. be kept to a minimum.

- Commonality will be stressed
- Multi-application tools will be used wherever possible
- General Purpose Electronic Equipment vs Special purpose shall be employed
- Ensure Navy standard Consolidated Automated Support System is used
- Verify use of Non-CASS ATE is approved

**WHEN** – Phase A initially, and throughout the system life cycle

**WHERE** – NAVAIR: PAX/Lakehurst, Fleet, Prime Contractor

**HOW –**

**NAVAIR PMA 260:**

PMA260's primary mission, as the single central executive responsible for the Naval Aviation SE Program and for DoD ATS leadership, is as follows:

1. Lead the development and maintenance of the Naval Aviation SE Program investment strategy and process oversight to insure optimization of support, development of CSE requirements, and SE standardization throughout naval aviation.
2. Manage the acquisition and life cycle support of fully developed, reliable, and supportable aviation CSE required to support the operation and maintenance of weapons, weapon systems, subsystems, and other support equipment. This includes responsibility for CSE requirements planning, research and development, acquisition, funding, support, foreign military sales, and test and evaluation.
3. Serve as Director of the ATS EAO and lead the Joint Services and U. S. Special Operations Command (USSOCOM) in the development of DoD ATS strategies based on an open systems approach and integrated diagnostics.

While responsibility for integrating the total aviation SE program is assigned to PMA260, primary acquisition responsibility and concept to disposal management for PSE and related systems is assigned to the appropriate weapon system Naval Aviation Program Executive Officer and PMA. Primary acquisition responsibility and life cycle management for CSE is the responsibility of PMA260.

***Aircraft Maintenance Material Readiness List (AMMRL):*** The overall program that provides the data required for effective management of Support Equipment (SE) at all levels of aircraft maintenance and training.

***Support Equipment Resources Management Information System (SERMIS):*** The primary automated management information system supporting the AMMRL Program, as well as Navy and Marine SE Logistics Managers. It provides:

- Employment allowancing through an interface with Automated Support Equipment Recommendation Data (AUTOSERD)
- Real time inventory data which is transferred utilizing the Local Asset Management System (LAMS)
- Provides standard inventory control procedures
- Assists in the redistribution of in-use SE assets
- Provides rework scheduling and tracking
- Primary tool for configuration management and control of air capable ships

- Designed to support aviation weapon systems as defined in the OPNAV Instructions Naval Aviation Maintenance Program 4790.2 series and the Naval Airborne Weapons Maintenance Program 8600 series

**Local Asset Management System (LAMS):** A standardized system for the management of support equipment (SE) at all three levels of naval aviation maintenance

- Enhances the control of inventory through upline reporting of se assets to the support equipment resources management information system commonly referred to as SERMIS
- Contains the master database of equipment for the Aviation Maintenance Material Readiness List (AMMRL) program
- Provides automated methods of tracking SE assets at the local level.

**Consolidated Automated Support System (CASS):** The Navy's standard Automatic Test Equipment for electronics and avionics. It is in use throughout the Navy both afloat and ashore, at Navy AIMDs and Depots, at USMC MALs, aboard CVs and L-Class ships, and at many other sites.

*Mainframe* CASS is fielded in four versions that are designed for specific testing requirements. The Hybrid version is the basic five-rack station. Other CASS versions add capability to the Hybrid Station to test radio-frequency components (pictured here), high power radar systems, electro-optics and communications/navigation/IFF systems.

CASS supports a wide range of aviation and electronics systems in the fleet. 541 CASS TPSs have been fielded, and another 900 are now in various stages of development. When the current TPS development effort is complete in 2006, there will be a total of 1,890 TPSs on CASS. About  $\frac{2}{3}$  of these will have been offloaded from the legacy testers which CASS replaces and the remainder will be new TPSs. As our fleet aircraft have new systems are added or existing systems changed, new or upgraded CASS TPSs will be developed and fielded

*Reconfigurable Transportable RT CASS:* The advent of the V-22, and especially USSOCOM's mobility requirements, has led to the development of a smaller version of CASS known as Reconfigurable Transportable CASS. This tester has the same capability as Mainframe CASS, but, due to advances in technology, packages this capability in nine or ten man-portable interlocking cases. RTCASS is Windows NT PC-based and is comprised of commercial-off-the-shelf components.

**NAVAIR LAKEHURST:*****Support Equipment Project Officer (SEPO):***

- Product Support Functional Manager (PSFM) for management of all SE requirements for the acquisition system program. Responsibilities include;
  - Planning requirements to the program plan and Weapons System Planning Data (WSPD) schedule
  - Peculiar SE (PSE) requirement identification, design and development, procurement, first article test, delivery and support throughout the system life cycle
  - Common SE (CSE) requirements identification, coordination and scheduling with PMA-260, CSE Program Manager
  - Budget (LRFS) development, defense and funding execution
  - Configuration management (changes (SEC), TDs, modification programs)
  - Sustained support

***SE Requirements Identification:***

- All identified requirements supported by an analysis
  - Operations and Maintenance task s
  - Task analysis (servicing, test, repair)
  - Approved Maintenance Plan
- Selection process determines SE to fulfill tasks
  - Early analysis results
  - Lead times
  - Availability to meet system program flight test requirements
  - Existing SE inventory screening

***Support Equipment Recommendation Data (SERD):***

- Usually provided by the prime contractor performing the supportability analysis
- Required for all PSE and CSE items
- Approved by the SEPO

***First Article Test (FAT):***

- Performed on PSE items prior to system test and evaluation

***Test & Evaluation:***

- All O level SE should be available for T&E
- Workarounds must be approved by the T&E lead or designated logistics lead
- OPEVAL SE shortfalls (PSE&CSE) require waiver in the OTRR message
- SE plays a vital role in the maintenance and system success of the OPEVAL

***Tool Program***

- Tool identification and selection
- Tool Box configuration
- User interface critical

***Calibration Measurements Requirements Summary (CMRS):***

- Parameters, ranges, accuracies and calibration intervals
- Ensures systems and equipment are adequately supported with approved calibration standards traceable to the National Institute of Standards and Technology (NIST)
- Responsibility for review and maintenance of the calibration standards is with MEC Corona, CA.

***Procurement and Delivery Schedule:***

- Contract requirements for SE (hardware, software, TPS, manufacturing etc.) are initiated by the SEPO with in-house contracts at Lakehurst
- Initial procurement schedules for SE are based analysis, lead times and on system development and demonstration program schedules prior to first fleet delivery and activation.
- Upon draft release or approved WSPD for site activation and standup schedules, SE outfitting will adhere to the WSPD schedule

**APML ROLE –**

- Ensure through the IPT process and in conjunction with the assigned SEPO that all SE and SE ILS requirements are planned, budgeted, funded, developed, procured, tested and delivered to meet acquisition system program policies, schedules and fleet introduction planning and scheduling throughout the system life cycle.
- Ensure ALSP reflects program requirements and planning
- Ensure system site activation planning includes SE, requirements and delivery schedules.
- Review SE budget and funding requirements to ensure required SE is provided to meet all system program schedules
- Review SE program progress and track challenges with the SEPO through the IPT process

- [ISS-Interim Supply Support](#)  
[SERP-Support Equipment Reclamation Program](#)  
[NAVSUP-2002](#)  
[DESEX Numbers and Directions](#)  
NAMP On-Line OPNAVINST 4790.2  
[Type Equipment Codes](#)  
[Organizational Codes](#)  
[NAVAIR 00-500A \(PDF\)](#)  
[SM&R Codes](#)  
[Weapons Support Equipment](#)  
[CANTRAC](#)  
[Naval Air Technical Data & Engineering Service Command \(NATEC\)](#)  
[LAMS Users Manual](#)  
[Barcode On-line Help](#)  
[LAMS 3.1 Patch](#)  
[LAMS 2000 Patch](#)

## POC –

CODE	TITLE	ACTIVITY	TELEPHONE
	Support Equipment Project Officer (SEPO)/SE	NAVAIR: Lakehurst	
	PSFM for Peculiar SE		
PMA-260	Common SE	NAVAIR HQ	
	LAMS Team Leader		(301) 757-1100 - DSN 757-1100
PMA-260C	Program Management	NAVAIR HQ,	(301) 757-6831
PMA-260C2	Program Management	NAVAIR HQ	(301) 757 6842
AIR-3.1.4G	SE Logistics	NAVAIR HQ	

See POC Listing for NAWCAD Lakehurst below.

## REF –

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

ALSP Guide

NAVAIR Contracting for Supportability Guide

Acquisition Logistics Handbook MIL-HDBK-502

## LINKS –

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.lakehurst.navy.mil>

Support Equipment

<http://pma260.navy.mil>

CASS and CASS TPS information

<https://pma260.navy.mil/cass/default.html-ssi>

CASS

<https://pma260.navy.mil/cse/>

CSE

<https://140.229.102.109/cse/>

CSE

<https://awis-nts3.mugu.navy.mil/nommpcd>

Weapons/Ordnance

**NAWCAD LAKEHURST** DSN: 624-xxxx COMMERCIAL: (732) 323-xxxx ENGINEERING FAX: (732) 323-4810  
 E-mail Address: \* [@navair.navy.mil](mailto:@navair.navy.mil)

<b>SUPPORT EQUIPMENT NOMENCLATURE</b>	<b>ENGINEERING (CODE 4.8.7.2)</b>	<b>LOGISTICS (CODE 3.1.4.4)</b>
AIRFRAME AND SERVICING SUPPORT EQUIPMENT		
BRANCH HEAD	X7912	4223
MOBILE FACILITIES, MAINTENANCE STANDS	X1953	4207
SPOTTING DOLLY, FLEDS	X4255	X1816 (Spotting Dolly)
FIRE FIGHTING VEHICLES	X2198	X4201
ARMAMENT LOADING AND TRANSPORTING EQUIPMENT, PSE/CSE ARMAMENT LOADING, HOISTING, AND RELATED ADAPTERS	X7923	X4348
MOBILE ELECTRIC POWER PLANTS, DUMMY LOADS, BATTERY CHARGERS, FLOODLIGHTS, AND FREQUENCY CONVERTERS	7418	X2684
V22 AND AE1 10FE ENGINE PSE, NON-TPS	X4215 FAX: (732)323-4033	4206
POLLUTION PREVENTION, HYDRAULICS, A/M320-21, AND AIRCRAFT JACKS, AIR CONDITIONERS AND PRE-HEATERS	X4258	X4157
TOW TRACTOR, SE TIRE MANUAL, CRASH/SALVAGE/MAINTENANCE CRANES, CRASH EQUIP.	X7906	X1816
CORROSION CONTROL, AIRCRAFT DEICERS, AIR COMPRESSORS, N2 M.F AND PURIFIERS	X4253	4157
H-1 AIRFRAME PSE	X7123	X2097
NDI, AIMD TUBE BENDER, CRYOGENIC SUPPORT/SERVICING/STORAGE EQUIPMENT	X4253	X7943 X7461
AVIATION LIFE SUPPORT SYSTEMS SUPPORT EQUIPMENT	X2963	X7943
TIEDOWNS, TOWBARS, WHEEL CHOCKS, AND RUN-UP RESTRAINTS, H-60 AIRFRAMES PSE, SHOCK AND VIBRATION TESTING	X7157	
NAMDR CLEARING HOUSE	X2412	
COST OF OWNERSHIP OF SUPPORT EQUIPMENT (COOOSE)	(CODE 3241) x7848	
COMMON SLINGS	(CODE 4.8.7.5)	(252) 464-0565 DSN 451-0565 NADEP CHERRY POINT
BORESCOPES	(CODE PMA260C28)	(904) 542-2751 JACKSONVILLE
CAD DRAWINGS	X2127	
PROPULSION SUPPORT EQUIPMENT		
A/F32T-6A, A/F32T-10, J52, J85, AND TF30 ADTR ASSY CFT SITE ACTIVATION	X4242	X2253
ENGINE HANDLING (EHATE), RESTRAINT HAWRDWARE	X7142	X2253
GROUND AIR START UNITS	X7149	X4223
A/F32T-16(V)1,2,3, A/F37T-16(V)2, T56, T58, T64, T700	X4251	X4230
JETI, F404/F414 ADAPTER ASSY	X4245	X4223
A/F32T-24(V)4,5, A/E37T-16(V)2, T58 & T64, T700 & T400 ADPTR ASSY	X7145	X4230
F110 ADAPTER ASSY, TEST CELL CORRELATION	X4243	X2253/X4230
O-LEVEL PROPULSION APU SE, I-LEVEL AUTOMATED ENGINER DATA ACQUISITION TEST SYSTEM, F110/F404/TF30 ENGINE TEST PROGRAMS	X1949	X4223
A/E37T-14, A/M37T-23, A/W37T-1, TF34 & F402 ADPTR ASSY	X7144	X4230



## M-2 - TEST PROGRAM SETS (TPS)

**WHO** – NAVAIR: PAX: PM260, NAVAIR: Lakehurst: (CASS and SE), FST

**WHAT** – The software media providing the executive program for an item of Automatic Test Equipment (ATE) to perform test and evaluation of specific items of equipment including WRAs and SRAs

**WHY** – Test Program Sets are required for most ATE for the maintainer to perform troubleshooting, maintenance, repair and test of applicable items at the intermediate and depot levels of maintenance.

**WHEN** – Phase B initially as the system is being developed and the necessary ATE has been identified that will provide maintenance support

**WHERE** – NAVAIR: PAX: PM260, NAVAIR: Lakehurst: (CASS and SE), FST

**HOW** – The following, is an example of a typical TPS development methodology, although it incorporates a model based methodology for TPS development:

### APML ROLE –

- Ensure SE LEM planning includes TPS identification, development, budget planning requirements if applicable
- Ensure requirements are initiated to allow lead time for user need and operational schedules
- Ensure all planning and requirements are included in the system ALSP
- Monitor requirement to ensure requirements achieve planned objectives

**POC –** Support Equipment LEM and/or, SEPO

**REF–**

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

ALSP Guide

NAVAIR Contracting for Supportability Guide

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.lakehurst.navy.mil>

NAVAIR Lakehurst New Jersey Home Page

## **APPENDIX N**

# **PACKAGING, HANDLING, STORAGE, AND TRANSPORTATION**

### **Table of Contents**

N-1 - PACKAGING HANDLING, STORAGE AND TRANSPORTATION (PHS&T)

## N-1 - PACKAGING, HANDLING, STORAGE AND TRANSPORTATION (PHS&T)

**WHO-** APML, NAVICP, Fleet, IPT, FST, Prime Contractor

**WHAT-** The resources, processes, designs, methods, and techniques to assure that all system and equipment items, including support and training equipment, are adequately protected during movement and storage.

**WHY-** Improper packaging significantly increases the repair costs and turn-around times of aviation depot level repairables

- Improperly packaged items increased overall repair costs of all items by six to eight percent
- Costs of "badly" packaged items increased typically by twenty-five to thirty percent
- Turn-around times increased up to sixteen percent, depending on availability of repair parts
- Effective PHS&T planning and integration directly impacts fleet readiness, item reliability, and logistic response times
- Each aircraft, weapon system or spare part which is received undamaged and operates correctly is a validation that early planning and implementation of PHS&T benefits the entire program.

**WHEN-**

- *Evaluated* in the research and development stages
- *Addressed* at each Integrated Logistics Support (ILS) milestone
- *Completed in Milestone III*, except for spare and repair parts packaging

**WHERE-** NAVAIR, NAVICP, Fleet, Prime Contractor, FMS Customer.

**HOW-**

***Planning & Requirements:***

- APML notifies NAVICP of new or existing programs which require PHS&T support
- NAVICP will, in-turn, assign the PHS&T LEM duties for that given program to the appropriate activity. ***For example***, *Naval Weapons Station Earle PHST Center (NWS Earle) will typically be assigned PHS&T LEM functions for ordnance programs*
- After initial contact with NAVICP, the APML coordinates directly with the LEM for the specific type of support required.

***PHS&T Logistics Element Management (LEM):*** Ensures that;

- The effectiveness of PHS&T is essential to the overall system program success
- PHS&T requirements must be considered during aircraft/weapon system development
- All system PHS&T requirements are met
- Proper PHS&T management has a significant impact on system effectiveness, reliability, maintainability, corrosion prevention and control, safety and the environment
- PHS&T consumes a measurable percentage of overall cost and is, therefore, a significant element of life cycle investment.

***LEM ILS Documentation Development and or Review:***

- Acquisition Logistics Support Plan (ALSP)
- Integrated Logistics Support Specification (ILS Specification)
- Integrated Support Plan (ISP)
- Logistics Requirements and Funding Summary (LRFS)
- PHS&T Milestone Chart

***LEM Will:*** (Provide as depicted in Figure N 1.1 below, once the above ILS documents are provided)

- Ensure requirements are addressed accurately
- Evaluate the system program's PHS&T requirements
- Determine whether funding is required (from APML)
- When appropriate, develops and provides a detailed cost estimate for the effort (forwards to APML)
- Forward supporting documentation, as required when completed (to APML)
- Attend program meetings
- Provide/ update PHS&T progress reports
- Address any PHS&T issues that arise

***LEM PHS&T Budgeting/Funding:***

- LEM develops budgeting/funding requirements for preparation of the Team Work Plan including;
  - Reusable containers costs:
    - Basic design engineering
    - Maintenance engineering
    - Logistics and acquisition
  - Hardware acquisition
  - Labor
  - Travel
  - Engineering support services
  - Support activities

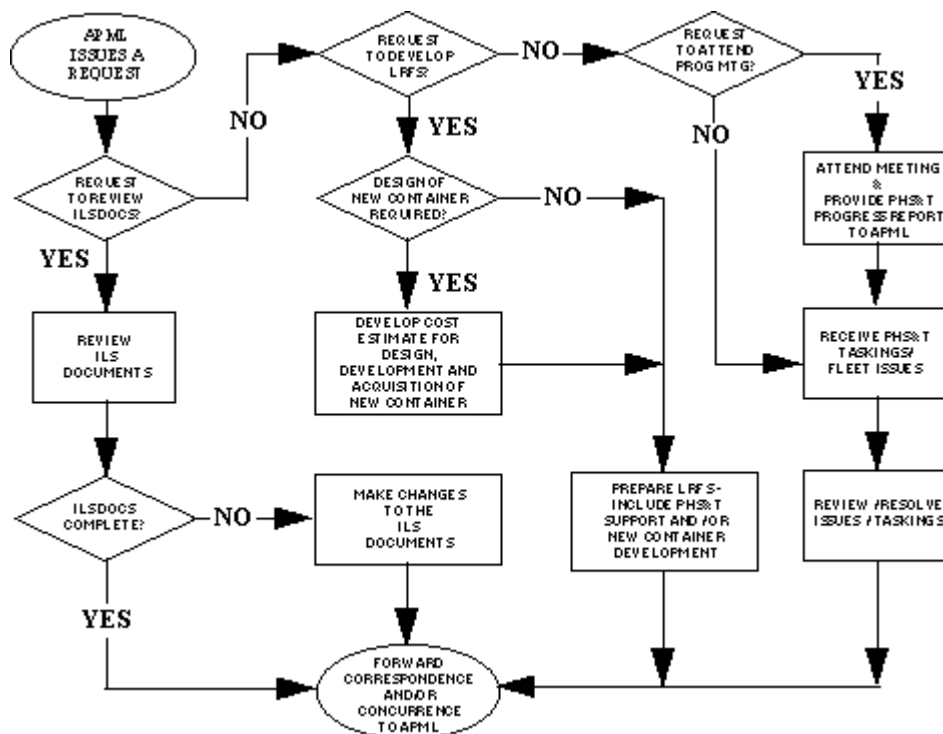


Figure N 1-1: The PHS&T LEM Process Flow for PHS&T Support Requests

***Partial List of PHS&T Considerations: (see PHS&T Desk Guide for detail information)***

- Aircraft Spares PHS&T Requirements
- Ordnance PHS&T Requirements
- Shelf Life
- Handling Equipment
- Ordnance Handling Equipment
- Material Handling Equipment
- Aircraft Handling Fixtures and Equipment
- Care of Supplies-in-Storage (COSIS)/Stock Readiness Program
- Preservation and Storage (Short & Long Term) of Aircraft, Weapons, and Components
- Preservation and Storage of Inactive or Non-program Aircraft (Desert Storage)
- Aircraft/Engine Preservation Lead for Technical Information Weapons/ Ordnance Preservation
- Aircraft and Component Preservation
- Storage of Special Tooling/Special Test Equipment at the Charles Melvin Price Support Center

- Reusable Container Design, Development and Testing
- Source Selections
- Independent Logistics Assessment (ILA) Enterprise Team (ET) Assessment
- Transportation of Aircraft, Weapons and Components Transportation Plans
- Contractor Transportation Data Submission Reviews Transportation Budgeting
- Transportation Account Codes (TAC)
- Freight Evaluations/Cost Analyses
- Expedited/Specialized Transportation Procedures
- DOD/Navy Transportation Committees/Conferences
- PHS&T Requirements/Specifications/Standards Development
- Department of Defense/Navy/Industry Specifications
- NAVAIR Standardization Lead
- Industry Committees
- Ordnance Unitization/Transportation Military Standards
- Ordnance Transportation Regulations
- NADEP/NAST Activities Local Packaging Specifications
- Packaging
- Packaging Coding, Navy Spares
- Care of Supplies in Storage (COSIS)
- Shelf-Life of Navy Managed Material
- Transportation Management
- Technical Assistance For Repairables Protection (TARP)

## **APML ROLE -**

- Obtain and review the NAVICP PHS&T Desk Guide for basic requirements of “what and who” as applicable
- Ensures early consideration, identification and coordination within the IPT process for PHS&T requirements
- Ensures IPT process provides notification to NAVICP for assignment of LEM to initiate, evaluate applicable PHS&T requirements
- Ensure ILS planning documentation is provided to the LEM for review and development of PHS&T requirements
- Ensure integration of all PHS&T requirements into system support planning including funding and resources
- Ensure funding is disbursed and executed for all required support

- Track overall PHS&T program status with LEM to ascertain user requirements are satisfied
- Ensures requirements are sustained and coordinated with the user throughout the system life cycle

**POC -**

CODE	TITLE	ACTIVITY	TELEPHONE
	Operations/Storage Policy Team	Defense Logistics Agency	(703) 767-3673 / (703) 767-3511 DSN Prefix-427 FAX (703) 767-3513
		Naval Air Systems Command (NAVAIR)	(703) 604-3660 ext 4267 FAX (703) 604-4516 DSN Prefix-664
Code 4.3.4.4	NAVAVNDEPOT	Jacksonville, FL	(904) 772-4516 / (904) 772-4519 FAX (904) 772-4523 DSN Prefix-942
	NAVAVNDEPOT	Cherry Point, NC	(919) 464-7368 / (919) 464-7131 FAX (919) 466-8108 DSN Prefix-582
Code 43460	NAVAVNDEPOT	North Island, San Diego, CA	(619) 545-9759 / (619) 545-9759 FAX (619) 545-7810 DSN Prefix-735
Code 41K100B120-3	Specifications, & Standards Branch	Naval Air Warfare Center Lakehurst, NJ	(908) 323-2628 - DSN Prefix-624 FAX (908) 323-4296
Code 5011		Naval Weapons Station Air Warfare Branch Naval PHST Center Naval Weapons Station Earle Colts Neck, NJ	(908) 866-2828 FAX (908) 866-2803 DSN Prefix-449
Code P0771.21	TARP	NAVICP	(215) 697-0476 - DSN 442-0476
Code P0771.20	PHS&T Management (Aircraft & ILS)	NAVICP	(215) 697-2887 - DSN Prefix-442 FAX (215) 697-4965
Code OF	For FMS Issues	NAVICP	(215) 697-4484 - DSN Prefix-442 FAX (215) 697-0332
Code 0343D	Aerospace Maintenance And Regeneration Center (AMARC)	NAVICP Detachment-	(520) 228-8449 - DSN Prefix-228 FAX (520) 228-8593
AIR-3.5.3	PHS&T PM Office		
077	Coordinates AIR-3.5.3 PHS&T Issues		
M077			(717) 605-2547 - DSN 430-2547 OR (215) 697-3278 - DSN 442-3278
P077.B	Transportation Management		(215) 697-2886 - DSN 442-2886
M0772.21	COSIS		(717) 605-1363 - DSN 430-1363
M077.C	Shelf Life		(717) 605-1506 - DSN 430-1506



**REF-**

MIL-STD-2073-1C, "Standard Practice for Military Packaging"

MIL-STD-2073-1B/-2C, The Packaging Requirements Code (PRC)

DOD 4140.27-M, "Shelf Life Management Manual"

OPNAVINST 4790.2F, "The Naval Aviation Maintenance Program"

NAVAIR 15-01-500, "Preservation of Naval Aircraft"

MIL-STD-648, "Design Criteria for Specialized Shipping Containers"

MIL-STD-1365, "Design Criteria for Handling Equipment Associated With Weapons and Related Items"

**LINKS-**

<http://www.navicp.navy.mil/07/phst.htm>

Engineering & Product Support PHS&T

<http://www.navicp.navy.mil/phst/apml/apml.htm>

PHS&T Desk Guide For APML's

<http://www.shelflife.hq.dla.mil>

DOD Shelf-Life Program

<http://www.icptarp.net>

TARP Web Port

TARP PHS&T Management Information System (MIS)

<http://www.icptarp.net/p700>

P700 WebPack Search; P700 Search Tool for Packaging Requirements

Navy packaging requirements software, named P700 Web Pack and P700 CD PACK (standalone CD version)

<http://www.nll.navsup.navy.mil/npd/>

Naval Logistics Library; Navy Packaging Data

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box

<http://deskbook.dau.mil/jsp/default.jsp>

AT&L Knowledge Sharing System

<https://www.nalda.navy.mil/3.6.1/ila/>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/alsp.html>

Logistics Tool Box

<https://www.nalda.navy.mil/3.6.1/ppsweb/index.htm>

Logistics Tool Box

# **APPENDIX O**

## **MANPOWER / PERSONNEL**

### **Table of Contents**

O-1 - MANPOWER AND PERSONNEL

## O-1 - MANPOWER AND PERSONNEL

**WHO** – NAVAIR: PAX: 3.4, PMA205, APML

AIR-3.4 has an expert team with the skills, knowledge, processes, facilities, and equipment required to plan, develop and integrate the fleet manpower, personnel, and training systems support requirements during systems acquisition and all phases of life-cycle management.

**WHAT** – Determine the total number of manpower requirements (Military, DoD Civilian and Contractor) and authorizations needed to operate, maintain, support, and provide training for the system upon full operational deployment

**WHY** –

- The initial manpower estimates address whether the system is affordable from a military end strength and civilian full-time equivalent perspective
- Analyses provide a basis for providing the most efficient and cost effective mix of DoD manpower, contract support, and system execution schedule impacts
- Determine personnel initiatives necessary to achieve readiness objectives, rotation objectives and reduce manpower or training costs

**WHEN** – Milestone A at program initiation

**WHERE** – NAVAIR

**HOW** –

- AIR-3.4 initiate the Manpower Estimate Report
- Conduct the Training Planning Process Methodology (TRPPM), identifies manpower/personnel and skill levels for each type of training.

***Training Planning Process Methodology (TRPPM):***

The TRPPM is a collection of tasks and sub-tasks which, if applied properly, can be used to develop MPT requirements estimates throughout the acquisition process. Unlike the HARDMAN methodologies, the TRPPM tasks are not “how to” procedures but standard tasks that, if performed, will produce MPT requirements estimates for a single system, total aircraft, or total ship.

- TRPPM adds new analysis capabilities and issues to those covered by HARDMAN
- Integration with Joint requirements and multi-Service interoperability are major considerations

- New training strategies employing a full range of electronic media to support delivery of training as close to the work site as possible should receive early consideration
- Training strategies are developed which provide the appropriate training for the sailor at each major career point according to the duty station
- For this reason, the MPT analysis must consider all relevant variables for the operational system. BCS will provide some data points, but is only useful as a point of departure for designing and developing MPT for systems that do not yet exist or have been significantly modified.

***TRPPM APPLICATION:***

- Analysis that is designed as a precursor to the NTSP process
- Initiates the MPT planning process early in the WSAP, prior to system design, thereby allowing manpower and training requirements to influence system design
- Analysis that makes possible the comparison of alternative manpower and training concepts and the early formulation of training resource requirements for each alternative concept
- Results in a final concept selection with ample lead time provided to:
  - Program for and acquire manpower and training resources
  - Formulate and establish the training program and detail
  - Train personnel

A typical application of TRPPM tasks results in the development of an initial NTSP (Part I only). The data contained in early iterations of this initial NTSP are preliminary in nature and do not represent the official MPT requirements of the program. These initial estimates are designed for planning purposes only and to assist the PM in assessing various design alternatives.

Conduct the Manpower And Training Analysis which supports the planning, analysis, development, acquisition, fielding, and required documentation of all aviation training systems and fleet manpower requirements by providing the following:

- MPT logistics analysis for Pre-Milestone II acquisition programs
- Navy Training System Plan development
- Preliminary Squadron Manpower Document development
- Manpower Estimate Report development
- Manpower analysis for all acquisition programs

**APML ROLE** – Interface with the AIR-3.4 representative for manpower and personnel requirements, estimate determination and analysis process initiation

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.4	M/P, LEM	NAVAIR HQ	
PMA205	Training LEM	NAVAIR HQ	

**REF –**

DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002)

ALSP Guide

Acquisition Logistics HDBK MIL-HDBK-502

OPNAVINST 1500.76

OPNAV P-751-1-9-97, Navy Training Requirements Documentation Manual (NTRDM). Provides the format and instructions for developing a Navy Training System Plan (NTSP) which documents the training system requirements for total ship, aircraft, equipment, system, subsystem, non-hardware acquisition, and modification programs

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<https://www.nalda.navy.mil/org/34.html>

Logistics Tool Box

<http://www.nalda.navy.mil/3.6.1/alsp.html>

Logistics Tool Box

[OPNAVINST 1500.76](#)

(Navy Training System Requirements, Acquisition, and Management), approved 21 July 1998

# **APPENDIX P**

## **TRAINING AND TRAINERS**

### **Table of Contents**

P-1 - TRAINING AND TRAINING SYSTEMS

## P-1 - TRAINING AND TRAINING SYSTEMS

**WHO** – NAVAIR: PAX: 3.4, PMA205, APML

**WHAT** – Training systems are comprised of systematically developed training products/methodologies including but not limited to:

- Training hardware (technical training equipment and support equipment)
- Training devices
- Training services
- Traditional media
- Curricula materials
- Training aids
- Instructor lead computer-aided instruction
- Self-paced computer-based training
- Web-based training
- Technical manuals
- Training facilities
- Embedded and deployable training capability (Advanced Distributed Learning (ADL))
- Training management systems
- Instructor and support personnel
- Technology development to sustain the system.

**WHY** – Training is a dominating support cost over the system life cycle, and a key to operational readiness.

**WHEN** – Navy Training System Plan (NTSP) developed pre-Milestone B

**WHERE** – NAVAIR, Fleet, Prime Contractor

**HOW** – AIR-3.4 has an expert team with the skills, knowledge, processes, facilities, and equipment required to plan, develop and integrate the fleet manpower, personnel, and training systems support requirements during systems acquisition and all phases of life-cycle management.

- 3.4.1 Manpower And Training Analysis · NAVAIR, PAX
- 3.4.2 Weapons, Ranges, Aerial Targets Training Systems · NAWC-WD
- 3.4.3 3 Simulators & Training Devices O&M · NAWC-TSD
- 3.4.4 4 Weapon Systems Technical Training · NAWC-AD
- 3.4.5 Aviation Support Equipment (SE) And Aircraft Launch And Recovery (ALRE) Training Systems Acquisition And Life-Cycle Support NAWC-AD, Lakehurst
- 3.4.6 Advanced Technology Training/ Training Development · NAVAIR, Pax

***In addition, they provide:***

- Operations and maintenance support (including Contractor Operation and Maintenance of Simulators (COMS))
- Contractor Simulation Instruction (CSI) for all weapon system specific and general training systems.
- Training systems documentation development for aircraft, weapons, support equipment
- Aircraft launch and recovery training systems acquisition and life-cycle support
- Weapons
- Aerial targets
- Ranges support
- Weapons system aviation aircrew and maintenance technical training concurrent with initial warfighter operational capabilities

The Navy's TSRA process is summarized in Figure P-1-1. The TSRA has been adapted from and meets OPNAV requirements (OPNAVINST 5000.50A, Navy Training Simulator and Device Acquisition and Management, 12 Aug 87). It is important to understand that the TSRA process, also referred to as front end analysis, is tailored by the training analyst to fit the scope of the training requirement. Obviously, the analysis required to support a minor update to a part task trainer would differ in scope and resources from the analysis required to support the new development of a major new training system.

As shown in Figure P-1-1, the TSRA proceeds thorough four major analysis activities. Each activity concludes with publication of a document or report. The general flow of the analysis starts with the identification and verification of a training need. It then proceeds with identification of alternative solutions, and culminates with the detailed specifications required for acquisition.

All training system requirement analysis is initiated by a user/sponsor who identifies a need. This need may be in response to a new or modified equipment requirement, a new mission or tactics requirement, job or student performance deficiencies, advances in instructional technology, or some other impetus. The user may state the need in the HARDMAN Manpower, Personnel, and Training Resources Requirements Document (MPTRRD); in an Operational Requirement (OR); in a Navy Training System Plan (NTSP); or in some other form of documentation. The scope of the TSRA is, in part, determined by the point of initiation of the need. For example, if the need is initiated with an OR, the TSRA would provide inputs to the HARDMAN and NTSP process. If the need is initiated in a NTSP, many decisions would already be made without benefit of the TSRA analysis. In this case, the TSRA would proceed on the basis of prescribed requirements unless the sponsor requested validation of those requirements.

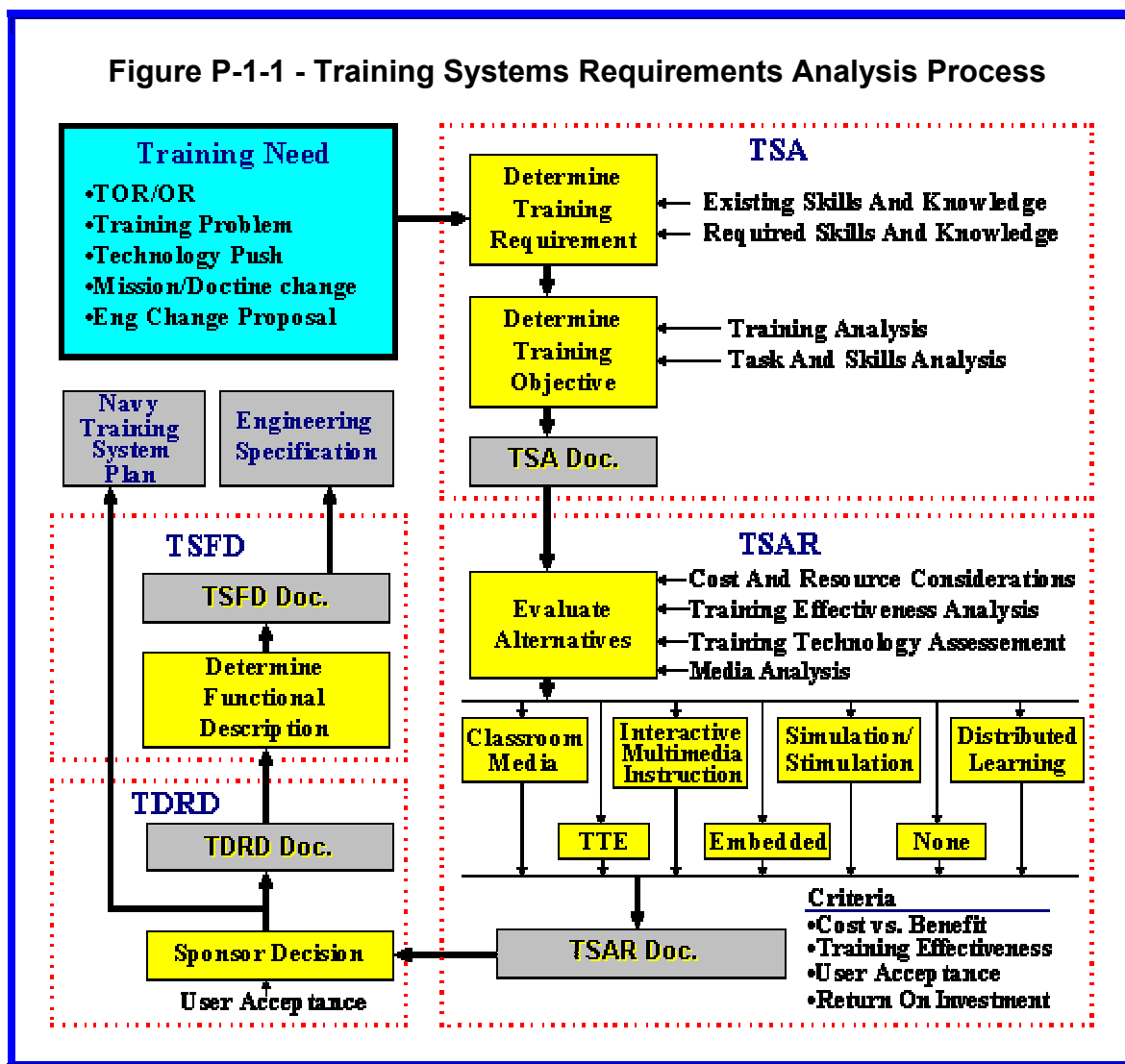


## Training Systems Requirements Analysis (TSRA)

The following is the process utilized by NAWCTSD to identify all training systems requirements associated with each weapon system or equipment,

The TSRA Process	TSRA Process Flow Chart
<p><b>Four major analysis activities of TSRA</b></p> <ol style="list-style-type: none"> <li>1. <a href="#">Training Situation Analysis (TSA)</a></li> <li>2. <a href="#">Training System Alternatives Report (TSAR)</a></li> <li>3. <a href="#">Training Device Requirements Document (TDRD)</a></li> <li>4. <a href="#">Training System Functional Description (TSFD)</a></li> </ol>	
<p><b><a href="#">Assistance In Training Requirements Analysis</a></b></p>	
<p><b>Instructional Systems Development</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Instructional Systems Development Acronyms</a></li> <li>• <a href="#">MIL-PRF-29612</a> Training Data Products Performance Specification</li> <li>• MIL-HDBK-29612             <ul style="list-style-type: none"> <li>○ <a href="#">Part 1</a>: Guidance for Acquisition of Training Data Products and Services (261k)</li> <li>○ <a href="#">Part 2</a>: Instructional Systems Development / Systems Approach to Training and Education (811k)</li> <li>○ <a href="#">Part 3</a>: Development of Interactive Multimedia Instructions (IMI) (448k)</li> <li>○ <a href="#">Part 4</a>: Glossary for Training (550k)</li> </ul> </li> <li>• <a href="#">Related Data Item Descriptions (DIDs)</a>:             <ul style="list-style-type: none"> <li>○ DI-ALSS-81518A Instructional Performance Requirements Document</li> <li>○ DI-ALSS-81519A Instructional Media Requirements Document</li> <li>○ DI-ALSS-81520A Instructional Media Design Package</li> <li>○ DI-ALSS-81521A Training Program Structure Document</li> <li>○ DI-ALSS-81522A Course Conduct Information Package</li> <li>○ DI-ALSS-81523A Training Conduct Support Document</li> <li>○ DI-ALSS-81524A Training Evaluation Document</li> <li>○ DI-ALSS-81525A Test Package</li> <li>○ DI-ALSS-81526A Instructional Media Package</li> <li>○ DI-ALSS-81527A Training System Support Document</li> </ul> </li> </ul>	

Upon request from a sponsoring agency to initiate a systematic investigation of a particular training need, the NAWCTSD will, with the help of the user/custodian community, perform a TSRA, and make recommendations for alternate solutions to satisfy the training need. The TSRA provides the first analysis of the training requirements for the weapon system.



The TSRA describes the basic purpose of the training (weapon system) platform type, equipment, system, subsystems, the type of training provided (operator, maintenance, team), the location and performance requirements (level of training). One of the major components of the TSRA is a list of training objectives (what knowledge and skills are to be learned). Included is rationale supporting use of a training device; this rationale would consider such factors as training objectives supported cost, availability, and maintainability.

The results of the TSRA are thoroughly coordinated with the fleet and training community before being incorporated into an alternatives document. The TSRA forms the basis for other training analysis documents, e.g., the TSAR, TDRD, NTSP, and TSFD. (The TSFD was formerly the Military Characteristics document.)

## **1. TRAINING SITUATION ANALYSIS (TSA)**

When a general training need has been stated and NAWCTSD assistance has been requested, a TSA may be performed to further define the need and to identify and evaluate possible alternative solutions. The process for general training problem analysis is illustrated in Figure P-1-1. The TSA takes a broad look at all aspects of an existing or emerging training situation or program. The process is scaled, as necessary, to fit the scope of the training situation under review. The TSA results in a recommended strategy for meeting all identified needs, including rough order of magnitude cost estimates, milestones, and schedule. If the recommended strategy includes a training system, then concept exploration activities are initiated in order to define the desired training system.

## **2. TRAINING SYSTEM ALTERNATIVES REPORT (TSAR).**

Once the need for a training system has been identified, the TSAR is used to identify and evaluate alternative approaches to the design of the training system, and to recommend the best approach. The TSAR begins with a description of training requirements (tasks, learning objectives, training environment), then continues with a description of any constraints that will apply to the training system. Various training system alternatives for meeting the training requirements are identified and described. These alternatives are formulated after conducting a media analysis, training technology assessment and a training effectiveness analysis. During these assessments, current and evolving instructional technologies are surveyed and their training capabilities and effectiveness are determined. A cost benefit analysis across many dimensions is performed on the alternatives. Return On Investment (ROI) calculations are included when appropriate. Tradeoff areas may include cost and other resource requirements; estimated training effectiveness; engineering risk; schedule implications; Manpower, Personnel, and Training (MPT) requirements; reliability and maintainability, and safety considerations. The TSAR includes a complete description of the alternatives and a recommended solution with supporting rationale. The TSAR is submitted to the sponsor for review and selection of the alternative.

## **3. TRAINING DEVICE REQUIREMENTS DOCUMENT (TDRD).**

Once a training alternative is selected and approved for implementation, a brief summary document is prepared for funding purposes. The TDRD summarizes the proposed training system, the training requirement, the training situation in which the system will be employed, and the resources required to develop, use, and maintain the training system. The TDRD is a required document and is used to support acquisition of the training system. The document is prepared in accordance with OPNAV guidance (OPNAVINST 5000.50A, Navy Training Simulator and Device Acquisition and Management, 12 Aug 87) and is a life cycle document. As such, it is referenced in the appropriate NTSP.

#### 4. TRAINING SYSTEM FUNCTIONAL DESCRIPTION (TSFD)

The TSFD defines the basic physical and functional baseline requirements of a training device as one component of a total instructional system designed to achieve specific learning objectives in a uniform and systematic format. It describes how the trainer will be developed, consistent with any known constraints on cost, producibility and supportability. The TSFD defines the device that will be delivered to the user and also includes information regarding the facilities and logistics elements necessary to support training. In its final form, an approved TSFD is a signed agreement or contract between the NAWCTSD, the Fleet Project Team (FPT) (or the user(s) where no FPT was established) and the cognizant sponsor; it specifies the physical and functional operating characteristics that will be included in the training device when delivered to the user. As a life cycle document the TSFD is updated to match changes to the training system.

#### ASSISTANCE IN TRAINING REQUIREMENTS ANALYSIS.

The NAWCTSD can provide assistance at all stages of the training requirements analysis process:

- Assisting user commands in identifying and validating training needs;
- Assisting sponsoring commands in identifying training alternatives, analyzing the training impact of operational equipment design, justifying and specifying training requirements throughout the Weapon System Acquisition Process (WSAP).

Request for assistance from any fleet unit may be forwarded to the cognizant Program Director (PD) in Orlando through the chain of command. Personal visits or telephone contacts are encouraged. After listening carefully to the need statement and performing preliminary analysis to verify understanding of the characteristics and scope of the need, NAWCTSD personnel will work with the requester to develop a Plan of Action and Milestones (POA&M), which meets the requester's objectives.

**APML ROLE –**

- Initiate contact with LEM, AIR-3.4 representative to ensure system requirements identification occurs
- Incorporate system information into ALSP
- Ensure requirements, identification, budget and execution are accomplished consistent with support system milestone schedules and fleet need
- Include Training LEM in all supportability reviews

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.4	Manpower and Personnel	NAVAIR HQ	
NAWCTSD	Training Systems	NAVAIR Orlando	
PMA-205	Trainer LEM	NAVAIR HQ	

**REF –** DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), ALSP, Acquisition Logistics HDBK MIL-HDBK-502

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.ntsc.navy.mil/>

NAVAIR TSD Enhancing Human Performance

<http://pma205.navair.navy.mil/>

Naval Aviation Training Systems

[OPNAVINST 1500.76](#)

(Navy Training System Requirements, Acquisition, and Management), approved 21 July 1998

# APPENDIX Q

## DESIGN INTERFACE

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Q-1 - DESIGN INTERFACE

## Q-1 - DESIGN INTERFACE

**WHO** – NAVAIR: PAX: 3.2, APML, APMSE, FST

**WHAT** – Design interface, which is part of the supportability analysis and systems engineering process, is the relationship of logistics-related design parameters to readiness and support resources requirements.

- These parameters are expressed in operational terms rather than inherent values.
- They specifically relate to system readiness objectives and support costs of the system.
- DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), Chapter 5, directs the program manager to use the systems engineering process to translate operational needs or requirements into a system solution that includes design, manufacturing, test and evaluation, and support processes and products.
- The design parameters are generated by design engineering, and the systems engineering efforts are designated sub-elements of the design interface element of logistics.

**WHY** – Ensure logistics influences the design of the weapon system to minimize support requirements.

**WHEN** – Establish a design interface program as early as Pre Milestone "A" and manage it throughout the acquisition process. Design interface activities fall into either pre-contract award or post-contract award categories.

**WHERE** – APML, FST, Prime Contractor

**HOW** – The Maintenance Planning process will use the results of these analyses to plan, program and budget for system maintenance in accordance with a given program maintenance concept and ORD requirements. *Design interface consists of the following sub-elements:*

- **Reliability and Maintainability (R&M)** - The objective of this sub-element is to design systems to achieve the using command's expressed R&M requirements. The Logistician and Engineer are responsible for placing R&M requirements on contract as well as influencing the systems design to support the customer's Reliability, Maintainability and Availability requirement. See MIL-HDBK 472.
- **Energy** - The objective of this sub-element is to design systems for efficient use of energy. This goal affects both the types of energy sources and the usage rates.

- **Survivability** - The objective of this sub-element is to design the system to resist losses when operating in a prescribed man-made hostile environment. Designing to meet the survivability requirements should consider an optimum mix of susceptibility and vulnerability reduction measures.
- **Standardization and Interoperability** - The objective of this sub-element is to design the system to assure it meets its standardization and interoperability requirements during operations with designated allied weapon systems.
- **Transportability** - The objective of this sub-element is to design the system and/or its components for ease of movement by conventional means of transportation.
- **Human Factors Engineering** - The objective of this sub-element is to design the system to facilitate ease of operation and maintenance by people. See DOD-HDBK-763.
- **System Safety** - The objective of this sub-element is to design the system so that it can be operated and maintained within acceptable levels of risk.
- **Hazardous Materials** - The objective of this sub-element is to design the system to minimize or eliminate hazardous materials to facilitate ease of operations support storage, and shipment.
- **Corrosion Prevention** - The objective of this sub-element is to design the system to resist corrosion damage of its component materials due to chemical, electrochemical, fungal, or bacterial attack while exposed to natural or induced environments without requiring special protective measures.
- **Nondestructive Inspection (NDI)** - The objective of this sub-element is to design the mechanical and structural equipment to facilitate ease of inspection using NDI equipment and techniques. MIL-HDBKs-728, 731, 732, and 733.



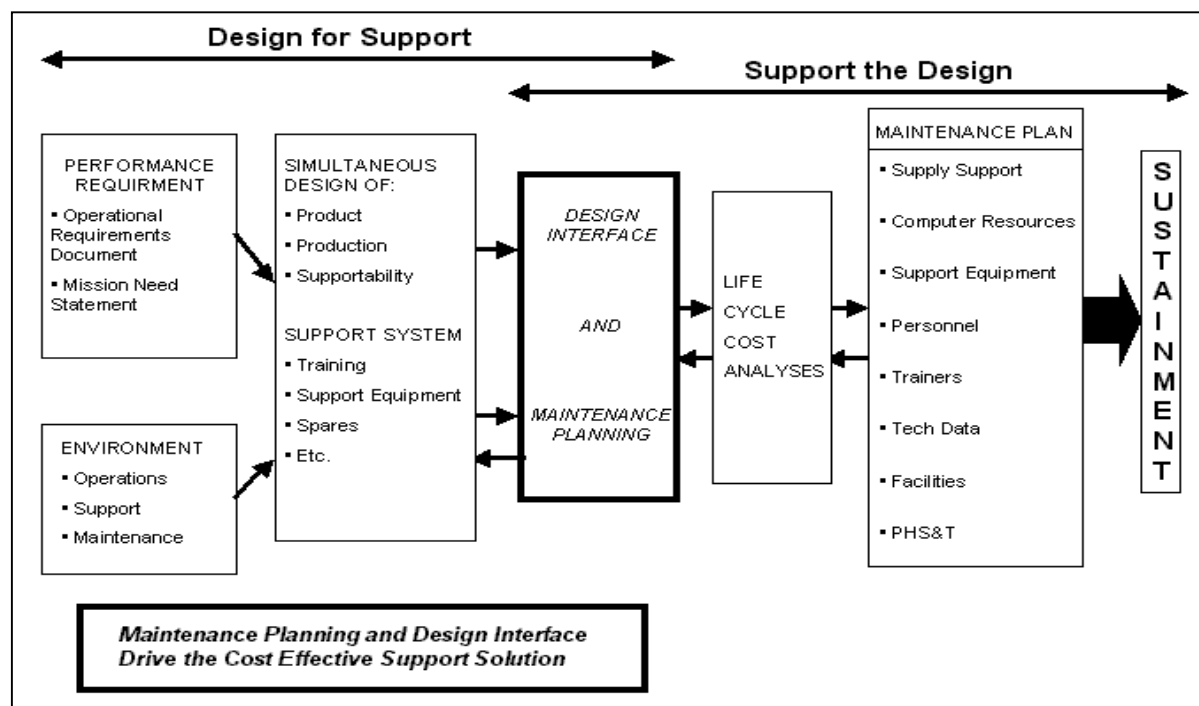


Figure Q-1-1 -- Support Planning Process

**APML ROLE –****Pre-Contract Award Tasks:**

- Update design interface planning
- Update design interface Portion of the ALSP
- Develop design interface portion of the request for proposal
- Develop source selection evaluation criteria
- Participate in source selection

**Post-Contract Award Tasks:**

- Monitor the execution of the design interface portions of the contract
- Include design interface results in milestone documentation
- Update design interface planning

**TASK DESCRIPTION:****Pre-Contract Award Tasks:***Develop the Design Interface Concept*

In developing the design interface concept it is important to consider all the design interface tasks, their relation to other tasks, which organizations will do what tasks, the tentative schedule for each task from Pre Milestone "A" and continue throughout the system's life cycle. Developing the design interface concepts requires an understanding of the user's requirements as expressed in the Operational Requirements Document (ORD) and entails describing the various tasks (studies, risk assessments, test

planning, test data analyses, etc.) necessary to define and achieve the design interface requirements for the system. Developing the design interface concept for the program requires working very closely with the design engineer.

*Develop the Design Interface portion of the Product Support planning document.*

The design interface portion of the planning document outlines the major points of the overall design interface concept for the program and explains its relation to the other nine functional elements. It is important to involve the using command, the air logistics command, and the system engineering personnel in the development of this portion of the planning document.

*Develop design interface Portion of the Request for Proposal (RFP)*

Developing the design interface portion of the RFP entails identifying the design interface specific tasks and non-design interface specific tasks (Failure Modes and Effects Analysis, Threat Studies, etc.) necessary to assure that design interface requirements are clearly defined at the system level for documentation. The System's Performance Specification will be reviewed for design interface requirements at the System Requirements Review (SRR). It also entails preparing the necessary Statement of Objectives (SOO) and sections L & M of the RFP to document the system level design interface requirements for preparing the Contract.

*Develop Source Selection Evaluation Criteria*

Ensure that design interface is appropriately weighted relative to other program considerations. Perceived design interface high-risk areas should be weighted more heavily to ensure that they receive a detailed investigation in the contract.

*Participate in Source Selection*

Arrange to have people knowledgeable in design interface evaluate that portion of each proposal. The types of expertise required for the evaluation will depend on what is critical in the instruction to offerors portion of the Request for Proposal but will probably include a requirement for both technical and logistical expertise. In evaluate the proposals, assess the contractor's understanding of the design interface requirement, the efficiency and logical interrelationship of the proposed schedules and tasks, the treatment of design interface tasks, and the approaches to establishing design tradeoff and risk identification efforts.

### **Post-Contract Award Tasks:**

*Monitor the Execution of the design interface Requirements*

There are several aspects to monitoring achievement of design interface contractual requirements. The first aspect is the formation of, and participation in, various bodies such as formal boards, working groups, and teams addressing certain design interface

sub-elements. Another aspect is participation in various technical reviews and audits. Both entail evaluating contractor prepared data, identifying problems, and recommending corrective actions. A third aspect is supporting test activities. This consists of assessing the decisions made regarding system level design interface requirements and determining appropriate verifications for inclusion in Section 4 of the System Performance Specification.

*Include design interface Results in Milestone Documentation*

- a. The milestone decision documents are written to a fairly high level of abstraction. It will therefore be very difficult to include detailed design interface information in any of these documents.
- b. The key milestone decision document into which the results of the design interface effort may be incorporated is the Integrated Program Summary. This document consists of an Executive Summary and seven Annexes.
- c. Other Milestone decision documents which may include information relative to design interface are the Acquisition Program Baseline (APB) and the Test and Evaluation Master Plan (TEMP).

**POC –**

CODE	TITLE	ACTIVITY	TELEPHONE
AIR-3.1E			
AIR-3.2			

**REF** – DoD 5000.2-R (to be replaced by a streamlined Guidebook IAW DEPSECDEF Memo dtd 30 October 2002), ALSP Guide, Contracting for Supportability Guide, Flexible Sustainment Guide, NAVAIR 00-25-406 Manual

**LINKS –**

<http://dod5000.dau.mil/>

New DoD 5000 Resource Center

<http://www.nalda.navy.mil/jacg>

Logistics Tool Box

<https://www.nalda.navy.mil/policytools.html>

Logistics Tool Box